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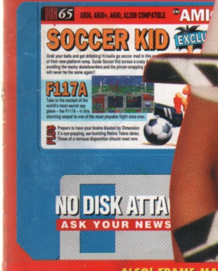

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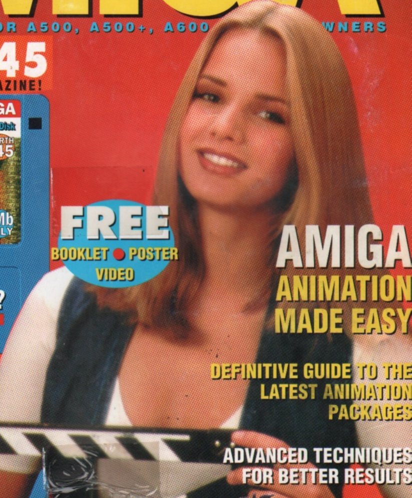

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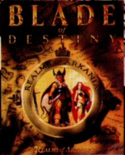

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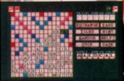

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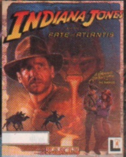

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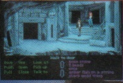

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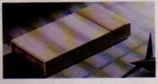

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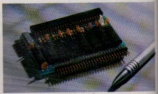

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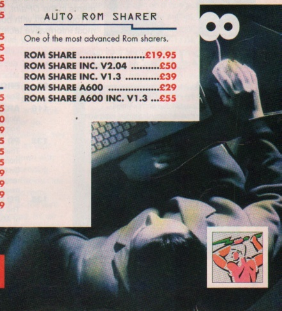

CU AMIGA

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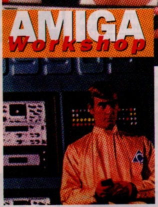
Professional animation is no longer the preserve of megabuck super computers – these days the Amiga is lending a hand in everything from blockbuster films to experimental art.

Low cost digitising equipment and 24-bit graphics boards have meant that anyone with a decent Amiga can produce the kind of Speilbergian effects that have cinema-goers leaping from their seats.

Then there are those on the alternative side, pioneering techniques that just aren't possible with conventional animation methods. How can you get into all this? Turn to page 30 to find out.



131 AMIGA WORKSHOP

Your one-stop guide to the Amiga, the Workshop is once again stacked with tips and info to help you get the most from your machine. This month sees the first of a regular series of Beginners' Guides which kicks off with Everything You Ever Wanted to Know About Amiga Music. There's also the return of the Comms column, and the best DIY project yet – How to Build a Robot! If that wasn't enough, you'll also find the latest instalments in the *DPaint*, AMOS and *Videotitler* tutorials. It's all rounded off with book reviews, Club Call, and the most informative technical Q&A section anywhere.

REGULARS

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Word of the first UK CES show.
King's Quest VI due on the Amiga.
Price increases follow Japanese explosion.
Alfred Chicken election results!

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The latest version of *D-Copy*, a whole load of AGA utilities, Chinese horoscopes, an alternative Workbench, and a chock-full disk of fonts are all on offer for next to nothing.

OFF THE CUFF

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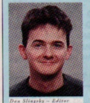

Dan Slingsby – Editor

We've got another BIG VALUE issue for you this month, with TWO program-packed disks, a FREE video offer, a 32-PAGE supplement and, for our younger readers, a completely huge *Soccer Kid* poster. Not only that, but we've also got the WORLD'S FIRST hands-on test of Commodore's new CD32 console, as well as an exclusive peak at the machine's development. Incredibly, it took just six months to produce the machine from scratch, and we've got the inside story on how it was done. In another scoop, you'll also find reviews of the first two CD32 games – to find out how we rated them, turn to page 24 of this month's super special CD supplement.

Elsewhere in the mag, you'll find our usual eclectic mix of news, reviews, opinion and step-by-step guides, plus a comprehensive look at advanced animation techniques. Desktop animation is a growth area for the Amiga at the moment, and Peter Lee and Nick Veitch detail the latest advances as well as taking a look at some of the more popular programs. If you've always wanted to make your *DPaint* matchstick men come to life, this is how to do it!

Talking of Nick, this is his last issue as CU Amiga's Technical Editor. He's taken the filthy lucre of a rival mag and departed for pastures new. Nick's been with the mag for nearly two years now and, in his time here, has almost single-handedly transformed our technical coverage. So, with hand on heart (and fingers firmly crossed), we'd like to wish him all the best in his new job. Break a leg, Nick (or, better still, your fingers...)

And, with the bottom of the page rapidly approaching, that's it for another issue. I'm off to play *Syndicate*...

NEXT ISSUE ON SALE 19TH SEPT

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ABC 96, 235 July-Dec 1992

GET SERIOUS

PRODUCTIVITY REVIEWS

In the world's most informative Amiga review section, this month we've got a round-up of five new monitors, and a close scrutinisation of *Technosound Turbo II*. We also give you the low-down on the latest update of Macro System's Retina, plus a massive feature with all you could possibly want to know about data storage, and all the usual expert reviews of the latest hardware and software to be released for your favourite computer

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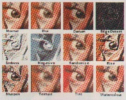

At last there's a serious rival to *Deluxe Paint*. Can AGA *Personal Paint* beat the sheer power and flexibility of *DPaint*? Find out on page 92.

Real time video frame grabbing is one of the most exciting developments in Amiga graphics. Find out how *Video Frame Machine* shapes up on page 104.

SCREEN SCENE

GAME REVIEWS

It's here! The official *Star Trek* game has finally made it to the Amiga – well, almost. We lift the lid in a special two-page Work in Progress feature. *Soccer Kid* also makes his debut this month – find out whether we give it a good kicking on page 58. There's also *Uridium 2*, *European Champions*, and the totally mad *One Step Beyond*! The Nightboat to Cairo is about to depart from page 46.

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85 TROLL'S HEAD

It's a game Jim, but not as we know it. Beam down to page 48 for a good gawp at the forthcoming *Star Trek* game.

Can Ocean's new golf sim match the neatly mowed greens and sprawling fairways of *PGA Tour*? Tee off on page 74.

COVERDISKS

Yet again CU AMIGA brings you not one but two stunning free disks! On Coverdisk 64 there's the complete *Advantage* spreadsheet system, and a fully useable morphing program. This month's storming game disk features *Soccer Kid*, *F-117A*, and a stroboscopic rave demo.

DISK 64 — PAGE 20

Advanage is not just a spreadsheet – it's a complete home office management system. Whatever the size of your personal or small business finances, *Advantage* has the power to put it all into order. Combining a spreadsheet, database, and data analyser sections in one fully functioning program, *Advantage* makes light work of heavy figures. Sporting 126 spreadsheet functions, keyboard and mouse macros, lightning-fast calculations, and a choice of 10 types of graph plots, it's just about the most advanced finance manager available for your Amiga. It also features support for 68881 and 68882 co-processors, compatibility with *Lotus 1-2-3* files, ARexx and *Transwrite*. You'll also find the latest version of the superb *VMorph* image processor on the disk, too.

64
A500, A500+, A600, A1200 COMPATIBLE
AMIGA
ADVANTAGE
By Gold Disk
WORTH £45
PLUS
1Mb ONLY

DISK 65 — PAGE 24

He's football crazy! He's football mad! He's Soccer Kid! The star of our brilliantly addictive playable demo just can't resist a good kick-about. Prepare yourself for one of the most gripping and original platform games ever seen on a computer or console. All the fun of kicking a football around the house, with none of the consequences – could you ask for anything more? Well, you could ask for a playable demo of *F-117A*, the brand new action flight simulation from MicroProse! Take control of a state of the art USAF Stealth Fighter, pass unnoticed through radar traps, seek out and destroy arms factories, and restore world peace. Then put the kettle on and have another go. Alternatively, you could let your hair down with the stomping Euro Retina One techno demo. Not for the faint hearted, it's an experience to be relished. Got any 'ardcore mate?

65
A500, A500+, A600, A1200 COMPATIBLE
AMIGA
SOCCER KID
EXCLUSIVE
F117A
PLUS
1Mb ONLY

JURASSIC PARK

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CU NEWS

MIXED RESPONSE TO CD32

On July the 16th, amid sweltering heat, Commodore's cutting edge CD games console, the CD32, was shown to the general press and the software publishing fraternity. The unveiling took place at the Science Museum in Kensington, and despite the fact that the bash was by invitation only, guests greatly exceeded Commodore's expectations and a number of important industry figures, who arrived late, were turned away by an over-zealous safety conscious doorman (apparently, much to the chagrin of David Pleasance, Commodore's UK MD). Of course, industry journalists were treated to a private unveiling almost two weeks earlier, but by all accounts the console was well received by all impartial viewers.

Although Commodore were promising a large number of titles available at launch, quite a few of them seem to be old CDTV ones, which just happen to be compatible. There was a reasonable developer presence, but few had completed titles ready to display, just demos. Over 50 titles are promised before Christmas though, including *Mortal Kombat, Nick Faldo Golf*, *Syndicate*, *Civilization* and *Whale's Voyage*. Little technical information was added to that which had already been released to the press, but there was one shock.

Lew Eggebrecht revealed the existence of an MPEG add-on for the CD32, which allows the unit to playback Full Motion Video titles. Commodore are looking to release the add-on before Christmas, but wouldn't give any guarantees. A separate MPEG cartridge was expected, but not quite so soon. When released it will retail for under £200, which makes the CD32 a very viable option in the market at present. Philips are expected to drop the price of the CD-i (which also has an MPEG cartridge available) later this year, but it would be difficult to imagine them matching the price of the CD32.

Perhaps most telling of all was the reaction from a number of Commodore's rivals to the launch, whose response seemed laden with sour grapes rather than anything else.

Despite being the largest console manufacturer in the world, Nintendo apparently have no CD-based machine to compete against Commodore's offering, or, for that matter, against arch-rival Sega's Mega CD. Nintendo's American marketing vice-president, Peter Main, is reported to have said 'CD as we see it on the market today is not the answer'. He later went on to say that 'There's no point in launching anything yet...' and talking about Sega's Mega CD he said that it was 'Dead in Japan and dying in Europe'. Gloomy words indeed – couldn't be because you simply missed the boat Peter?

In a more significant move, Commodore's traditional rivals Atari announced the development of their own 64-bit console called the Jaguar. No units were available as the machine doesn't yet exist, leading some industry pundits to call 'foul play' on what has been seen as spoiling tactics from Atari. Ironically, considering the dubious success of Sega's add-on CD drive, the Jaguar will not come with a CD ROM drive as standard, and even the console itself is unlikely to appear before next year, if ever.

At the moment Sega are still Commodore's only rivals in the CD console market, and their response was the most illuminating; they point blank refused to give out any Mega CD details to Amiga journalists. Afraid it'll suffer by comparison, eh boys?! [*If you want to see how the two systems compare, and it's not flattering to Sega, take a look at the Tech Specs we've printed in this month's supplement – Ed*].

Many stars turned up to the CD32 launch, including the Big Breakfast's Chris Evans and Radio One DJ, Bruno Brookes. Chris was there as the offical presenter helping to lift what was otherwise a pretty dull display.

CES HITS BRITAIN

THE CONSUMER ELECTRONICS SHOW
OLYMPIA 16-20 SEPTEMBER
LIVE '93
GET YOUR FINGER ON THE PULSE

September 16th sees the start of Britain's first ever Consumer Electronics Show, a staging ground for everything that's new in the world of technology. Unlike its American counterpart, the British CES goes under the name of Live '93 but the differences end there as, just like the overseas version, it will contain a strong mix of brand new software and state-of-the-art hardware. Expect to marvel at the delights of the home stereo that's so intelligent it turns itself off when the phone rings. Or how about a personal digital organiser that recognises your handwriting? Or maybe you'd prefer the waterproof camera that can be cleaned in a dishwasher?

Live '93 is a knob-twiddlers paradise with gadgets, widgets, hardware and software all fully accessible, along with demonstrations, awards, competitions, lectures and seminars, live television and radio broadcasts and showbiz personalities (including Phil Collins judging a Young Composer of the Year contest) as well as the first public showing of the new CD32! The show runs from the 16th to the 20th of September and costs just £7 per ticket. For full information call the ticket hotline on 071 373 8141.

SHOWING OFF BIG STYLE

Conversion cables are now available which allow Amiga owners to use the Epson VP-100PS projector. The unit can be linked to the computer to project a standard Amiga display at distances up to 12 feet across the diagonal.

Alternatively, the unit can be hooked up to a TV tuner (which is supplied free for an introductory period) and used as a projection TV suitable for use in clubs, etc.

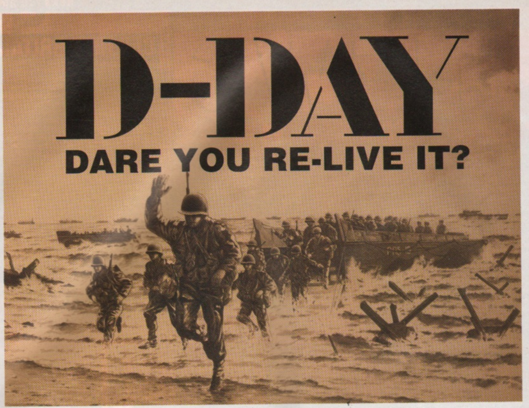
When connected to an Amiga running presentation software such as *Scala*, the quality of the projection far exceeds the original CGA graphics that the VP-100PS was designed for. Apparently it's 'mind blowing to project a fast flight simulator up into a six foot by four display and lose yourself in the clouds.'

Find out more by ring Visual Products on 0494 890601.

»

D-DAY

DARE YOU RE-LIVE IT?



5th June, 1944. Evening... The storm clouds of war are gathering over the Channel. Just after midnight Operation Overlord will commence, unleashing the allied forces against the might of the German Army on the beaches of Normandy...

PC

Hone your skills beforehand with up to 28 training missions. Now, as the legendary General Dwight D. Eisenhower, you're ready to lead the offensive...

Liberate the strategically crucial village of St. Mere Eglise. In the hush of the war-room, pore over the war map, plan tactics and issue your commands.

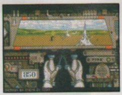
PC

Then it's into the fury of battle as you take to the tracer-lit skies at the controls of a B17 Bomber, softening up your target with a daring pinpoint bombing raid...

With explosions still ringing in your ears, drop the 82nd Airborne into safe locations - remember, their lives hang on your skill...

Now come the big guns. In the sweltering heat of a tank you rumble towards the front line...squinting from the gunner's turret you blast away an enemy Panzer and thunder on...

ATARI ST



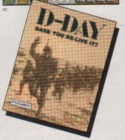
AMIGA

Finally, with bayonets fixed, wave in your infantry to take back the village in treacherous hand - to - hand combat.

Adjust difficulty levels to match your ability... introduce the fog of war to make those strategic decisions ultimately realistic... do whatever you need to for victory.

ASK YOUR RETAILER FOR D-DAY NOW!

PC



***Available on:* PC & Compatibles, CBM Amiga & Atari ST.**

FUTURA

Screen shots are intended to be illustrative of the gameplay and not the screen graphics which may vary considerably between formats in quality and appearance and are subject to the computer's specifications.
PC Graphic Support: EGA/VGA/MCGA PROCESSOR: 386sx or better. Minimum Memory Required: 548k RAM. Sonic Support : AdLib™ and Roland™ Sound Cards. CBM Amiga/Atari ST Minimum Memory Required 1Mb.
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U.S. GOLD

SYNDICATE DATA DISK

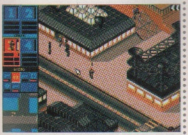
Fans of Bullfrog's latest hit game will be delighted to learn that a data disk is not only planned but has already been written and should be available by the beginning of September.

Rather than simply producing loads more levels which are exactly the same as existing ones, Bullfrog have modified the existing game to make it even more exciting, even more playable.

The greatest enhancement is the fact that the game will now feature a datalink mode whereby up to eight players can link their Amigas together to battle it out for control of each city. Each player will control a separate Syndicate and there will be special multi-player scenarios which have been designed to challenge the hardest player. In addition, the single player levels can also be played by multiple players.

Bullfrog's head honcho, Pete Molyneux, says that the new game will make the previous one look like a walk in the park, and I quote 'You'll know the meaning of terror when you start to encounter police armed with gauss guns' [flame throwers]!

In addition to existing game features there will be two new weapons which 'make the gauss gun look like waterpistol', and a disguise for your agents to wear. Makes you drool at the thought of it!



FAST REPAIRS

London based computer repairers, HCS Engineering, are offering what are claimed to be the fastest Amiga repairs in the country. Normal service guarantees a three day turnaround, and under their special premium service computers handed in by 11am will be fixed and ready to collect by 4pm the same day. Just the thing for the increasing numbers of people who are using the Amiga in a professional environment.

At the moment the average cost of a repair is £38.13, although obviously prices vary according to what needs to be done. As part of their repair service, HCS also offer reconditioned internal drives for two thirds of the price of brand new ones. They also give a free quote before any work is undertaken. Phone HCS on 071 252 3553.

WORLD OF COMMODORE AMIGA SHOW

Darling Harbour, 2nd-4th June 1993 ***In this first of an irregular series of reports, Bruce Smith travels to Australia to report on their recent Amiga extravaganza.***

It's only when you have been there that you realise what a bloody long way Australia is. But, for those attending and those exhibiting, the World of Commodore Amiga at Sydney's magnificent Darling Harbour complex was an unqualified success.

In case you're wondering about the viability of the Amiga in a country of just 17 million people, the official attendance figure for the three day event was put at 22,000. No doubt that this was on the generous side, but the 15,000 or so who probably did attend were treated to a number of new releases and first-time viewings.

While the rumours of Commodore's plight world-wide abounded Commodore Australia reported record hardware sales for each day of the show. Judging by the number of A1200s I saw tucked away under arms it was hardly surprising. The A1200 was the big puller at the show, although a number of A600s were also making their way past complex security systems (it is actually harder to get out of this show then get in!). The A4000 Tower System was due to have its own first showing on the Commodore stand but it never materialised.

The advertised theme of the Show, and in particular of the large, although somewhat disappointing Commodore stand, was multimedia. That said, what the Sydney outpost lacked in panache was more than compensated for by the purpose-built multimedia theatre in an ante-room to the side. The theatre, which seated some 150, was well stocked with four-channels of CD-quality sound, lighting, on-screen (cascade) graphics and video disk players – all mainly controlled by *Scala* software.

The orgy of electronics provided the setting for a number of interesting discussions although the hardware was, for the most part, somewhat under-utilised. The multimedia theme was not overly present throughout the rest of the Show, other than the A570 CD-ROM drive, which was probably the most popular peripheral to buy after an A1200.

And talking of buying – the last day of the Show was a real wallet buster in terms of what was on offer to those attending. I won't go into the complexities of Aussie pricing but suffice to say several dealers visiting the show on the day told me that they could not buy some of the hardware at the prices it was being sold at by the main Commodore outlets. Nuff said.

Some familiar names to turn up at the Show (and several local bars) were Digita International, Power Computing, Meridian Distribution and this reporter, Bruce Smith, under the guise of Bruce Smith Books. One name who didn't quite make it was Amiga Format. The staff arrived but the magazines didn't – well apparently not until the day after the Show finished!

Florida-based Moonlight Software – which produced the excellent *Ami Tools* and *Ami Back* packages came, saw and, for the large part, conquered. President Gary Holland was more than happy with the first showing of his products Down Under. But the Australian market is far from being European or US driven and it was interesting to note that Australia now supports two independent magazines, while the New Zealand-produced 'Amiga Down Under' is well worth a read.

Sydney-based Wall Street Videos also made their debut at the show with their A1200 Beginners video which proved to be a big hit with those with A1200 in hand.

The one thing wonderfully lacking from the show was noise. Absolutely no competing between stands for the title of most annoying noise. Indeed, the ambience for the hall was set rather well by a local electronic violinist who did a much admired gig every hour on the Commodore stand.

User groups abounded – not just for the average punter seeking support, but also for the developer – something that might work well up here. Developers were also given the first chance to see the new CD32 system behind closed doors. (So much for being a developer here in the UK – Commodore have yet to tell me and quite a few like me that it actually exists.)

And, of course, just like any good Amiga Show the shell schemes burgeoned with dealers and box shifters with prices falling as quickly as the English wickets were that week.

All in all an interesting experience and, judging by the smiles on exhibitors and punters alike, a very rewarding one. A G'day or three was had by all.

The World of Commodore Show in Australia was an unqualified success judging by this snap. Many A1200s were sold throughout the event and much interest was generated for other Amiga products down-under. It's reassuring to see Commodore still prepared to invest in such showcases.

»

COMMODORE WRITES

Our exclusive hotline to Commodore's UK boss was red hot this month. In a frank Q&A session, David Pleasance fields your latest batch of questions.

Six months ago I bought a Commodore CDTV. Now I'm told that the machine was a mistake and I should go out and buy a CD32 console instead. I have spent £700 on my present system and feel that it's been a waste of time and money. Will there be an upgrade/trade-in deal for CDTV owners or are you just going to ignore us?
Philip Alderson, Wirral.

I have to admit we get many letters of this nature, and it is frankly quite a dilemma. The pace at which technology is advancing is quite staggering, and we are forced, by the actions of our competitors, to continue to offer 'more for less'.

When we launched the CDTV it was revolutionary, offering performance standards second to none. Unfortunately, the high cost fo manufacture meant a retail price point too high for mass market appeal. We at Commodore are renowned for offering more upgrade opportunities than any other manufacturer. I will be talking to the corporation about CDTV owners, but it is very difficult when the cost of the Amiga CD32 is so much less than the CDTV. I shall, of course, let you know (through this page) of the outcome.

I have purchased an A1200 and have been fairly pleased with my new machine. Unfortunately, for reasons known only to yourselves, the computer didn't come with the Using AmigaDOS Guide or the Using Arexx Guide that are issued with the A4000. I have tried to track down where I can get these books, but I've been passed from department to department, been told to write to various addresses, and generally been given the runaround. Maybe as the top man at Commodore, you could tell me where I can get these books from?
Shaun Walsh, Bristol.

The Amiga 1200, because of its low price point, does not have either manuals you refer to included as standard. As a result of your letter (and many other similar enquiries) I have instigated an enquiry as to the viability of making manuals available through our distribution channels. Watch this page for an update.

Why do you treat your end users with so much contempt? I was one of the 'fools' that rushed out and bought an A600 as soon as it was released, because I wanted to upgrade my A500. Little did I suspect that a few months later you would release the A1200 and then cut the price of an A600 virtually in half. To make matters even worse, I recently took advantage of the trade-in offer, and finally parted with my aging A500 to get a £100 discount on the A1200. Now, less than a month after this offer began, I find out that I could have held on to my A500 because you had decided to reduce the price of the A1200 to £299. While I applaud your competitive pricing policy, can't you understand that this pisses off those users who are the first to support you?
Darren Williams, Hull.

I am very empathetic to your situation, but frankly we are in a no win position (see the first letter this month). However, I now believe that now we're a '32 bit only' company we will have stable price points for some time yet. Also, we strive to retain upward compatibility with each new product launched, with a view to minimising the obsolescence of software plus peripherals owned by existing Amiga users. Rest assured that it is in everyone's best interest if we can achieve a high volume of sales at a reasonable RRP.

Why delay the launch of the A1200 CD drive? I would have thought it made sense to launch it at the same time as the CD console for maximum publicity. I own an A1200 and don't want to be left behind in the CD revolution.
Mark Stacey, Eastbourne.

Now that the operating system for Amiga CD32 has been finalised, we are currently designing CD ROM devices for the Amiga 1200 and Amiga 4000 ranges. However, due to an anticipated high level of demand for Amiga CD32, our resources are being directed here first. We should however have the add-on device for the A1200 in early Spring, along with many great software titles expected to be published. Your patience will, I am sure, be well rewarded.

I'm thinking about buying an A1200, but already I'm starting to hear rumours about an A1400 as well as the new 'triple A' chipset that's in development. With new machines waiting in the wings, will I be wasting my money buying an A1200?
David Carpenter, Ludlow.

I can assure you that no one in our R&D Department knows anything about any A1400. We are in the process of developing a new Chipset (working name AAA) for our high end graphics workstations.

At £299 the A1200 is a fabulous bargain – buy one.

I purchased an Amiga 1200 back in November and had seven months of pleasure from it. Then last week it developed a fault. Sheer despair came over me before I remembered my 'Free 12 month In-home Warranty'. I tried not to get too excited, though, as I've heard many stories of Commodore's less than helpful customer care. But, with no other option, I phoned the hotline number...

Imagine my surprise, then, when a friendly voice answered the phone, took down my details and informed me that someone would be in touch within 48 hours. Four days later, and I was still waiting. I phoned again, and was told that because I live in the north of the country, I would have to wait a little longer than usual!

My question is this: Why should I be penalised for the part of the country I live in and why am I still waiting?! [*We have since contacted Mr. Hall to find out he had to wait seven days for a repair technician to call – Ed*].
Mark Hall, Northumberland.

This is one of those instances where your geographic location is the sole reason for your difficulty. Overall, the 'At Home' service is a great benefit to our end users, most of whom are well satisfied with the level of service and promptness of our engineers. We are constantly striving to improve the coverage, but there are still some areas, such as the Shetlands for example, and also low populated regions where it is not practical for an engineer to travel a long distance for one call. These inevitably will fall outside the time parameters we set ourselves. If it is of any consolation, returning the Amiga to your dealer for return to base repair would involve a much longer time than a seven day turn around.

WRITE BACK!

After twisting his arm a bit (and butying him a few drinks), Commodore's UK boss, David Pleasance, has agreed to provide an exclusive monthly column for CU Amiga readers. As well as detailing the Big C's upcoming plans, David will also be answering any reader questions. So, if you've got a burning question you'd like to ask, send it to:
Commodore Writes, CU AMIGA, Priory Court, 30-32 Farringdon Lane, Farringdon, London, EC1R 3AU.

AMIGA CHARTS TOP TEN

It's very much a sporting month with the top three titles all being sports-related, *Goal!* doing especially well, jumping straight into the number one spot. *Chaos Engine* drops from No.7 to No.10 making way for two new entries – *Walker* and the superb helicopter simulation *Gunship 2000*.

1. Goal! (Virgin)
2. Graham Gooch's Cricket (Audiogenic)
3. Championship Manager '93 (Domark)
4. Syndicate (Electronic Arts)
5. Flashback (US Gold)
6. Walker (Psygnosis)
7. Gunship 2000 (MicroProse)
8. Ishar 2 (Daze)
9. Flashback (US Gold)
10. Chaos Engine (Renegade)

Charts supplied by HMV.

Irvan's Island
Listen
Eat
Sleep
Enrol

LUCASARTS HOAX

Rumours have been buzzing around the Amiga world of late that LucasArts were set to convert the highly popular *Day Of The Tentacle* adventure from the PC, despite claims from the American company that they have stopped producing for the Amiga. Unfortunately these have proved to be nothing more than gossip as LucasArts have officially denied any existence of *DOTT* on the Amiga.

A demo disk, purportedly showing Amiga screens, that was doing the magazine rounds would appear to have been an elaborate hoax.

SMARTER THAN THE AVERAGE ANIMATOR

Did you find the *Disney Animation Studio* just a little too complex? If so then maybe Empire's forthcoming *Hanna Barbera Cartoon Animator* is what you need to make your very own animated classics. Billed as a simplified version of every animation package, *Cartoon Animator's* controls and features can, allegedly, be mastered by a seven-year old in under an hour, leaving the user free to simply worry about his own creative ability rather than the tools he's working with.

Cartoon Animator has most of the features that you would find in other animation packages, combined with a simplified user interface. Empire aren't strictly aiming the product at the younger market though, going more for anyone that just wants to animate with ease rather than comprehensiveness.

On another note, the long-awaited release of *Cyberspace* is now upon us. O.D.E.'s three-dimensional technofest should be hitting the streets early in October. Watch for a review real soon.

MORPHING MADE EASY

Anyone that's ever marvelled at the special effects in films like Terminator 2 or The Abyss, or gaped at the way the way the snail turns itself into a frog in the current advert for a well known financial company, will probably be overjoyed to learn that that they can now do it themselves for a fraction of the price.

Silica Systems have dropped the price of their well-received Cinemorph package from £99.95 to a very competitive £24.95 inc. VAT. 'It is an aggressive price point,' agrees Andy Leaning, spokesman for Silica Systems. 'When GVP first launched their software package it was very, very successful in that they met their initial demand target a lot quicker than was expected. Because of this we have been able to cut the price significantly.' For more details call Silica's Shop on 081 309 1111.

cinemorph
GVP

CD VIDEO
STANDARD AGREED AT LAST

Although there has long been an accepted standard for the storage of compact disc audio, no such standard has existed for video stored on CD, despite the fact that systems such as Philips' Laser Disk have been around for more than a decade.

Finally, four of the industry's biggest players in the shape of JVC, Matsushita, Philips and Sony have got together to agree upon a single standard for Full Motion Video (FMV). The standard is to be imaginatively called Video CD, and versions of it have already been used successfully in the professional Karaoke market for some years now.

The agreement of a standard means that publishers can produce discs which will be compatible with all machines that adhere to the standard. The good news is that Commodore's own CD32 FMV attachment (the MPEG cartridge mentioned earlier) will adhere to the new standard.

SIERRA MEETS THE VIRTUAL THEATRE

Amidst the increasing reports of hordes of American software houses abandoning the Amiga for PC land, one beacon of hope has just started to shine even brighter than before. Sierra's massively popular *King's Quest VI* is being currently being translated to the Amiga by none other than Revolution Software, the team that brought us *Lure Of The Temptress* and the soon to be unveiled *Beneath a Steel Sky*.

What's more, this isn't just a standard port-over. The whole game is being completely re-written so that Revolution can incorporate their highly successful Virtual Theatre engine, the software that turns an adventure game from a simple collection of screens to a living, breathing world. 'Sierra, traditionally, have not been very successful at converting onto the Amiga,' says Charles Cecil, Managing Director of Revolution. 'That's because they take the data and port it directly across. That is quite clearly not appropriate. We are re-writing the game from scratch.'

The only thing that's not being touched is the storyline. As Charles explains, 'The plot will be absolutely identical. Sierra have been very comprehensive in the information they've given us as to how the story works. There will be no changes whatsoever.'

King's Quest VI is still in the early stages of development and a release date is still to be finalised. Revolution are confident that very little will have changed from the initial PC version, although don't expect to see any of the features from the recently-released CD-ROM version. However, although a CD32 version hasn't been ruled out by Revolution, the final decision on that is being left to Sierra.

"Look! An intruder!"

JAPAN STUCK FOR GLUE

A recent explosion in a Japanese epoxy resin factory could have serious repercussions in the pricing of computer hardware. The Sumitomo Chemical Company in Niihama, Japan are the world's foremost manufacturers of the epoxy resin used to make cases for microprocessors and computer chips. The explosion and resulting fire have completely decimated the plant's production systems, cutting off almost 55% of the computer industry's resin supply.

Naturally, this has caused varying degrees of panic buying throughout the world's hardware manufacturers. Larger companies aren't too badly affected since they have built up stockpiles of the resin, but smaller manufacturers are starting to suffer and look set to increase prices to make up for the increase in production costs. RAM chips that once cost £25 have risen to £50 overnight. Leading suppliers Silica Systems have already increased the price of their PC range by £100.

The PC market is the worst hit due to the large number of independent manufacturers, although there is expected to be a degree of residual damage in other markets. Amiga prices should remain constant for the time being, so long as Commodore's stockpile isn't depleted before other epoxy resin manufacturers can make up for the losses.

The cause of the fire is unknown at the present and the Sumitomo Company is still in the process of assessing the damage. Whether the plant will be able to start running again in the near future is unknown.

ELECTION NIGHT SPECIAL

The votes have been cast, the results have been counted and the winner has been announced. With the turmoil(?) of the recent Christchurch by-election behind us it should have come as no surprise to anyone that the Alfred Chicken party, Mindscape's rather unique marketing ploy of running one of their product managers for office dressed in a large furry Alfred costume, didn't win. What is surprising is that they actually succeeded in polling 18 real-life, honest to goodness votes and managed to push the unfortunate (and rather more serious) Rainbow Alliance party into last place!

'We didn't come last!' exclaims Mindscape PR Manager, James Morris, jubilantly. 'The democratic system seemed to work perfectly well in that 18 people really did want Alfred to win. The Rainbow Alliance party came last which justifies our whole reason for standing.'

In answer to recently published allegations by a leading national tabloid that Mindscape took advantage of the taxpayer's money to get a free advertising campaign, Mindscape are adamant that they didn't use any of the opportunities available to candidates. 'That was a false claim,' counters James, 'we didn't use those facilities. All we did was have a bit of fun and justified our whole standing by receiving 18 votes. The reports and the quotes were all made up. There was nothing there that was actually said. I feel sorry for people like Chris Eubank or Philip Schofield that get slated all the time. It's only when you're on the receiving end that you realise they (the papers) really do make it all up.'

So, a successful campaign all round, right down to the scandal in the newspapers. We here at CU Amiga can't wait for the general election to come round. We're thinking of running ourselves!

SO LONG, AND THANKS FOR ALL THE GUINNESS

In scenes of excessive and needless violence, Dan said a heartfelt and tearful goodbye this month to CU Amiga's long time Tech Ed, Nick Veitch, who's off to join a rival publishing house. Here's a picture of the two in a 'fond' farewell embrace. As you can see, both were really rather 'choked' and promised to write each other letters every other day.

In his time here, Nick radically revamped our review pages, as well as coming up with more excuses for being late than British Rail. To celebrate his leaving, we've spared every expense in putting together a quite fabulous competition. If you'd like to win the entire contents of Nick's desk, which include a couple of stale sarnies, a bottle of scotch in a brown paper bag, and his legendary sonic screwdriver which was used to disable nearly every Amiga in the building, then simply finish the following sentence in not more than 20 words: 'I think Nick is a dirty rotten traitor and should be.....'. The most vicious reply will, of course, win. Answers, on the back of a postcard, should be sent to 'Nick's A Traitor Compo', c/o CU Amiga and should reach us by October 20th.

VIRTUAL VISION

Remember the scene in Back To The Future 2 where Marty's son was watching TV on a visor across his eyes? Well now you can do the same thanks to Virtual Vision, the take anywhere, watch anytime television.

The Virtual Vision unit comprises of a sun-reflecting visor and a transmitter beltpack that broadcasts the TV signal onto a small window in the visor. The result is like seeing a small TV screen floating about six feet in front of you, allowing you to watch whatever is being broadcast as well as see everything that's going on around you. Virtual Vision will be on display at the Live '93 show.

STAFF WRITERS WANTED

With Nick, our tech ed, having done a runner, CU AMIGA urgently needs to fill a couple of positions on the magazine. We're looking for two incredibly talented staff writers who know the Amiga inside and out, have a thorough knowledge of the software and peripherals market, and have an authoritative and humorous writing style. Magazine experience isn't absolutely necessary, though examples of published or unpublished work may be required. Apply in confidence by sending your C.V. to: Dan Slingsby, CU AMIGA, 30-32 Farringdon Lane, London, EC1R 3AU.

ERROR! ERROR!

This month's CD32 supplement contains a most heinous error! We're not going to tell you what it is, because it's too embarassing and makes us look like we don't know what we're talking about (when do we ever?!). We'll give you a clue though. Try looking for it in the previews section. The first clever dick to write in and point out how stupid we are, will win a pair of 48 inch flares so thay can look as silly as us! Send your entries to: 'You're a right dim lot at CU', CU AMIGA, 30-32 Farringdon Lane, London, EC1R 3AU. Entries must reach us by 20th September.

The BBC Radio 1's
TV and Radio presenter

AMIGA CD32
32bit
commodore
AMIGA CD32
ONLY
£299.99

The exterior may be sleek but lurking inside the Amiga CD32 is a technological wonder. At it's heart is the mightily powerful 68EC020 processor from Motorola. This contains the 32 - bit technology which has made the Amiga 1200 a runaway success throughout Europe.

Alongside it is Commodore's unique custom AGA (Advanced Graphics Architecture) chipset - comprising three chips nicknamed Paula, Lisa and Alice.

Together they make Amiga CD32 and awesome powerhouse of high speed graphics and stunning sound capabilities.

In fact, the machine can display 256,000 colours on screen (compared to Sega's Mega CD which can only display 64) and has a total colour palette of 16.8 million colours. Amiga CD32 also comes with a chunky 2 Meg of RAM (that's15 times more than Mega CD) and a double speed drive.

SPECIFICATIONS:

* 14 MHZ 68EC020 processor
* 2 Megs 32 - bit chip RAM
* 2 Joystick ports/controller ports
* S- video jack
* Composite video jack
* RF output Jack
* Stereo audio jacks
* Keyboard connector/ auxiliary connector
* Full expansion bus
* Headphone jack
* Headphone volume control
* External brick power supply
* Internal MPEG FMV expansion capability
* Multiple session disc capability

INDI DIRECT MAIL

Proudly Presents
THE
JAKKI BRAMBLES COLUMN

Hi ,

Two guesses as to what I'm going to review this month. You'll probably get it in one.... **The new Amiga CD32**

July 16th at the Science Museum in London, Commodore Launched **'CD32** to a very excited audience; and what a launch it was! We all expected to see a very special Amiga but no one (except Commodore) could imagine just how special!

In fact, only in June of this year did Sega themselves quote "we could bring a 32 - bit console out tomorrow...but the problem is the price and I don't think that problem will be solved this year or next year" Well Commodore have definately knocked that theory on the head with a retail price of **£299.99.**

I won't go on about all the other breakthroughs this console has made as I know the magazines are full of reviews giving all that teckie stuff etc. but I really must say something about the staggering amount of software that's due for release. Somewhere between 50 and 100 titles will be available by Christmas and more importantly all the great software houses are now developing products, including Psygnosis, Ocean, Gremlin and many many more.

As if all this wasn't enough there's still more to come from this incredible box of tricks...**Full Motion Video**. By the inclusion of a neat little gadget called an **Mpeg Module** you'll soon be able to watch films on CD and that really does mean some really special products are just around the corner. I can't wait to see and hear all my favourite bands on CD and the Amiga CD is just waiting to play them.

Anyway I'm sure you're just as convinced as I am that this product from Commodore really is just a bit special and certainly changes the future for things to come the likes we have never seen before. Why don't you drop me a line and tell me what you think, in fact how about some suggestions as to what you'd like to do with the new Amiga and I'll get Indi to give one away for the best letter.

See you next month.

Cheers

Jakki Brambles

INDI MULTI MEDIA CLUB

A true 'One Stop Shop' for all members. On offer each month with an ever increasing product range , members can obtain software to cover every application including **Morphing, Rendering, Raytracing, Video** and a PD Library second to none. The Club also offers a very comprehensive range of videos including the **Cult Manga Titles, Music, Features and Special Interest**. There really is something to suit every ones taste. Membership costs only £10 and each member receives a quality gift on joining, even though there is absolutely no commitment to buy at any time. If you would like to be a part of this exciting club then call **Indi on 0543 419 999**

DMA ENSURES HIGHEST PRACTICE

As with most industries, the UK's personal computer industry has its share of cowboys operating in the mail order sector and at the receiving end a line up of despairing consumers who have suffered at their hands.

A personal computer is a sophisticated and expensive item and provided the purchaser is dealing with a reputable and accredited supplier, buying a computer by mail order can be a perfectly safe and cost effective exercise. The Direct Marketing Association (DMA) was set up in April 92 to set and maintain high standards for the sake of the industry and society at large, and to ensure that we can continue to regulate our own activities on the basis of proper professional responsibility.

Membership of the DMA is not conferred lightly - it is a privilege which entails responsibilities, to the consumer as well as to the industry. The foundation for this must be good practice. DMA members are required to abide by the highest standards as laid down in the DMA's code, enforced on members by The Authority of the DMA a separate body with an independent Chairman, and which is an assurance of vigorous self - regulation and professional responsibility.

DMA members also agree, as a condition of membership, to abide by The British Code of Advertising Practice and The British Code of Sales Promotion Practice: to apply the Mailing Preference Service file when appropriate: and to subscribe to the Advertising Standards Board of Finance (ASBOF) and to the Mailing Standards Levy as applicable.

The DMA symbol can only be used by members. Printed on stationary, advertising and other promotional material it demonstrates that these companies conform to the Association's high standards and are subject to the DMA's Code of Practice, thus enhancing the companies credibility with customers, suppliers and of greatest importance, the consumer.

Since the symbol was introduced last June, it has become synonymous with quality , professionalism and and responsibility. While it cannot be shown in any way which will become a sign of best industry practice and of strict adherence to DMA codes of conduct. The symbol represents authority for members and reassurance for consumers. It has been a high valued mark of confidence signifying to the consumer the truly professional edge of the industry.

Alison Slann

Alison Slan
(Director of Public Relations,DMA)

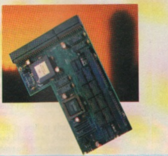
WANT THE BEST IN PROFESSIONAL AMIGA. WHY NOT TAKE ADVANTAGE OF THE CREDIT DEALS AVAILABLE
(SUBJECT TO STATUS). CREDIT AVAILABLE ON 6,12, 18, 24, 36 MONTHS.
WHY NOT RING NOW FOR A QUOTE. SAME DAY RESPONSE.

AMIGA RECOMMENDED PERIPHERALS & ACCESSORIES

NEW FROM MICROBOTICS!!!. M1230XA ACCELERATOR LAUNCH!!

Microbotics beats the competition in price/ performance/ features and configurations. INDI is very pleased to announce the availability of the new 68030 accelerator product for the A1200: the microbotics M1230 XA (call it the "XA" for short). 50 Mhz as standard! Huge 128 MB memory design is standard (the biggest memory space in any A1200 peripheral) just look at these specifications and prices!

M1230 XA W/40 MHZ EC 030 OMB	**INDI PRICE £177.17**
M1230 XA W/40 MHZ EC 030 4MB	**INDI PRICE £285.17**
M1230 XA W/40 MHZ EC 030 8MB	**INDI PRICE £639.99**
M1230 XA W/50 MHZ MMU 030 0MB	**INDI PRICE £399.99**
M1230 XA W/50 MHZ MMU 030 4MB	**INDI PRICE £499.99**
M1230 XA W/50 MHZ MMU 030 8MB	**INDI PRICE £711.99**



MBX1200.

The original and best floating point unit and memor upgrade for the Amiga A1200. Available with 0,4 or 8 MB o 32 bit Fast RAM and a choice of floating point units.Now complete with real time clock (RTC)

IMBX1200Z 6881 14 MHZ 0MB	**INDI PRICE £ 91.32**
MBX1200Z 6881 14 MHZ 4MB	**INDI PRICE £199.00**
MBX1200Z 6881 14 MHZ 8MB	**INDI PRICE £519.99**
MBX1200Z 6882 25 MHZ 0MB	**INDI PRICE £132.61**
MBX1200Z 6882 25 MHZ 4MB	**INDI PRICE £240 61**
MBX1200Z 6882 25 MHZ 8MB	**INDI PRICE £579.99**
MBX1200Z 6882 50 MHZ 0 MB	**INDI PRICE £200.14**
MBX1200Z 6882 50 MHZ 4MB	**INDI PRICE £308.14**
MBX1200Z 6882 50 MHZ 8MB	**INDI PRICE £669.99**
68882 FPU UPGRADE	**INDI PRICE £669.99**

AUDIO VISUAL

MEGAMIX. Low cost, hi spec digital effects cartridge plugs into the printer port of the Amiga. Allows stereo sampling from almost any musical source.

INDI PRICE £29.99

TAKE 2. Animation package is a must foe computer artists and enthusiasts of all ages. As used in Rolf Harris Cartoon Club.

INDI PRICE £37.99

VIDI AMIGA 12. The ultimate low cost colour digitiser for the Amiga. "The best value full colour digitiser on the market" AMIGA FORMAT.

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ROMBO VIDI AMIGA 24(RT). For the more serious user, this 24 - bit version will again capture from from any video source with true photo realistic images! A staggering 16.7 million colours can be utilised with incredible results. Full AGA chipset support.

INDI PRICE £239.99

ROCTEC ROCGEN
Entry level Genlock for all Amigas. Record stunning Amiga Graphics into standard video or overlay text and graphics onto a video signal.

INDI PRICE £69.99

ROCTEC ROCGEN PLUS. As above but with extra features such as tinting and signal inversion. Allows for real time editing of graphics. Compatible with all Amigas.

INDI PRICE £133.99

ROCTEC ROCKEY. The ultimate accessory for Amiga / Video fans. Separate RGB controls to chroma key on any colour.

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ROMBO VIDI AMIGA 12 (RT). Based on the best selling Vidi Amiga 12. This all new version offers real time colour capture from any video source. Full AGA chipset support as standard for all A1200 / 4000 users.

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AMIGA PERIPHERALS

2MB SMARTCARD. The original and still the only fully PCMCIA compatible memory card for A600/ A1200.Comes with lifetime guarantee. Beware of cheap imitations.
INDI PRICE £129.99

4MB SMARTCARD. Same as above but maximum 4MB.
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Trapdoor upgrade for the A600, 1Mb with RTC **INDI PRICE £49.99**
ZAPPO 601 INC As above only 512K, no clock **INDI PRICE £29.99**

DISK DRIVES

EXTERNAL 3.5" DRIVE

ZAPPO EXTERNAL FLOPPY

You've seen all the reviews on this popular and affordable second Amiga drive. Compatible with all Amigas.

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Quality: 9 out of10. Exceptional value for money. AMIGA COMPUTING JAN 93

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Commodores original and best selling colour stereo monitor.
Now includes swivel and tilt stand for total ease of use.

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M501 The original 0.5MB battery backed upgrade fo the A500.

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8 Up memory board. Designed for the A1500/ A2000. Memory upgradeable to 2/ 4 or 8MB

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Hard frame suitable for A1500/ A2000. Allows for the interface of a SCSI hard drive.

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OPAL VISION

OpalVision

NEW FOR SEPTEMBER RELEASE!

The already acclaimed Opalvision Board takes three further leaps into the future with the official launch of the Opalvision modules. With truly awesome capabilities the Amiga can now become the most professional 24 - bit video graphics power station ever!

The NEW OPAL VISION system(Rev.2)

The amazing Opalvision 24 - bit graphics board and software suite has been updated and is now even better value for money.

The software suite now includes:
Opal Paint V2.0 - Now includes full magic wand implementation and Alpha Channel that allows photo compositing with selectable levels on a pixel by pixel basis.The new Chrominance effect allows absolute, real time control of image contrast, brilliance and re - mapping of colours.
Opal AnimMATE V2.0 - ofering real time play back of animations created by ray tracers, landscape generators, morphers and all other 24 - Bit software.
Opal Hotkey V2.0 - Display OpalVision graphics anytime with key combinations.

Opal Presents - Comprehensive, icon - driven presentation package.
Special Limited off er
IMAGINE V2.0 for only **£59.99** when purchased with OPALVISION
Imagine 3D is the most popular 3D rendering software, that now supports OpalVision.This is a full version that would cost £300 if purchaed separately.
***"Quite simply, it's a spectacular product** - Amiga Computing*
***"Undoubtedly the finest, most professional paint program to arrive on the Amiga"** - Amiga Format*
***"Professonal quality at this Price can't be turned away"** - Amiga User International*
***"The verdict was unanimous - brilliant"** - Amiga Shopper*

INDI PRICE **£549.99**

OPAL VISION VIDEO PROCESSOR

Plug this card into the Opalvision mainboard and a a wealth of additional features and functionality. Included is the long awaited "Roaster Chip" for an unlimited number of digital video effects.

Features include:-
*24 - bit real - time frame grabbing from composit or S - Video
*Professional quality genlocking
*High quality digital video effects
*"Roaster Chip"for effects of unequalled quality
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INDI PRICE **£899.99**

THE OPAL VISION VIDEO SUIT

A power packed video and audio mixing, switching and transcoding device. This 19 inch rack mount u is so advanced that it actually has its own internal computer. With a total of 9 video and 10 audio inputs available the flexibility of this professional to is incredible

Features include:-
* 4 X compoite inputs
* 4 x 5 video inputs (SVHS, Hi - 8 of Y/C)
* 2 x RGB inputs
* 1 x Master sync input
* 1 x Composite main output
* 1 x S - Video main output1 x RGB mains output
* 1 x composite preview
* 10 x mono audio inputs (or 5 stereo pairs)
* Stereo output with 5 band equalizer

INDI PRICE **£899.99**

OPAL VISION SCAN - RATE CONVERTE

Add this card to the Opalvision Main board and acieve 31 KHz non interlaced output of Amiga graphics. On board memory also servesas a separa frame - store for dual frame bufferapplications
Features include:-
Converts interlaced PAL and NTSC to 31KHz non interlaced flicker - free display
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Works with any multi - sync / multi scan monitor
Incudes full, infinate window Time base correction
Operates in RGB for superior quality

INDI PRICE **£899.99**

TERMS AVAILABLE OVER 6, 12, 24, & 36 MONTHS SUBJECT TO STATUS.
WHY NOT RING FOR A QUOTE. SAMEDAY RESPONSE. (SEE EXAMPLE)

Panasonic *Quiet* Colour Printing

We researched the colour printer market at great depth to find a colour printer good enough to cope with Amiga's powerful output, yet at an affordable price.
We found the perfect printer in the KX - P2180 and KX - P2123 quiet printers.
We then considered that if you were going to buy a Panasonic printer you would probably need a quality word processing package to use with it. We found that too, with 'Wordworth' yet at a retail price of £129.99 we thought that might be a little too expensive on top of your printer purchase! So together with Panasonic we decided to give a copy of 'Wordworth' free with every Panasonic printer. How's that for added value?

Panasonic KX - P2180

***WORDWORTH COMPLETELY FREE! WITH PANASONIC QUIET PRINTERS.** The writers choice. The ultimate word processor for AMIGA computers. Wordworth is undoubtedly the ultimate word / document processor for the full range of AMIGA computers. The graphical nature of WORDWORTH makes producing documents faster and easier, with the enhanced printing fonts (including full Panasonic KX - P2180 and KX - P2123 colour printing support), Collins spell checker and thesaurus, no other word processor comes close. "Without doubt this is one of the best document processors for the AMIGA, Today" (Amiga Format)

NORMAL RRP £129.99 inc. VAT

The new Panasonic KX - P2180 9 -pin quiet printer. Produces crisp clear text in mono or in 7 glorious colours with new quiet technology. THe new KX - P2180 is typically 15dBa quieter in operation, than the competition.

- **Fast Printing** Speeds 192 CPS NLQ
- **Colour Printing** 7 colour palette (blue, red, green, yellow, violet, magenta,black)
- **Quiet printing** Super quiet 45 - 48 dBa sound level (most matrix printers are typically in excess of 60 dBa)
- **6 Resident Fonts** Over 6,100 type styles using Courier Prestige, Bold PS, Roman, Script and Sans Serif Fonts.
- **3 Paper Paths** Paper handling from bottom, top and rear for total flexibility
- **1 Year Warranty** for total peace of mind

INDI PRICE
£179.99

Panasonic KX - P2123

THE UK'S BEST SELLING COLOUR MATRIX PRINTER

The new high performance Panasonic KX - P2123 24 pin. Quiet colour printer offers leading edge quiet printing technology at an affordable price

INDI PRICE
£239.99

- **Fast Printing Speeds** 192 CPS draft, 64 CPS LQ and 32 SLQ.
- **Colour Printing** 7 colour palette (blue, red, green, yellow, violet, magenta, black)
- **Quiet Printing** Super quiet 43.5 - 46 dBa sound level (most matrix printers are typically in excess of 60 dBa)
- **7 Resident Fonts** Over152,000 type styles using Super LQ, Courier Prestige, Bold PS, Roman, Script, and Sans Serif Fonts.
- **24PIN Diamond** Printhead High performance and high quality output
- **1 Year Warranty** for total peace of mind.

Panasonic LASER PRINTER

KX - P4410 LASER PRINTER

WORDWORTH COMPLETELY FREE WITH PANASONIC LASER PRINTERS.
The writers choice. The ultimate word processor for AMIGA computers
NORMAL RRP £129.99 inc VAT

KX - P4430 LASER PRINTER

Once again INDI have joined together with Panasonic to offer all Amiga owners the most outstanding Laser Printer offer ever. We are now able to offer high quality, professional laser printing at affordable prices. We are also giving away a copy of Wordworth with every Panasonic Laser Printer purchased (RRP £129.99). Whether you are looking for a laser printer to handle word processing, DTP, presentation or complex graphic applications - the Panasonic range offers you the power to meet your requirements.

KXP - 4410

- 5 pages per minute
- 28 resident fonts
- Optional 2nd input bin(total printer capacity 2 x 200 sheets)
- Low running costs
- Parallel interface
- Optional memory expansion to 4.5 Mb (0.5 as standard)
- HP laserjet II Emulation

INDI PRICE
£549.99
inc. VAT
Imminent price increase.
This price while stocks last.

WORDWORTH COMPLETELY FREE WITH LASER PRINTERS

Panasonic
2 YEAR
ON-SITE WARRANTY

KXP - 4430

- Satinprint (optimum resolution technology)*
- 5 Pages per minute
- HP Laserjet III Emulation, PCL 5
- 8 Scalable fonts & 28 bitmap functions
- Optional 2nd input bin (total printer capacity 2 x 200 sheets
- Optional memory expansion to 5.0 Mb (1 Mb as standard)

INDI PRICE
£699.99
inc. VAT
Imminent price increase.
This price while stocks last.

*(Satinprinters use optimum resolution technology to produce truly outstanding print quality. This software technique smooths away traditional jagged edges on curved characters and lines by varying the printed dot size

WORDWORTH COMPLETELY FREE WITH LASER PRINTERS

Panasonic PRINTER ACCESSORIES

1) PANASONIC AUTOMATIC SHEET FEEDER
Automatic sheet feeder for KXP 2180/ KXP 2123 holds 80 A4 sheets. **INDI PRICE £89.99**

2) PRINT DUST COVER
Specially tailored quality dust cover for Panasonic KXP 2180/ KXP 2123 printer. **INDI PRICE £8.99**

3) PRINTER STAND
2 piece printer stand. **INDI PRICE £9.99**

4) PAPER PACK
500 sheets quality A4 paper. **INDI PRICE £9.99**

5) CONTINUOUS PAPER
2000 sheets 1 part listing paper. **INDI PRICE £19.99**

6) PARALLEL PRINTER CABLE
To be used when connecting Amiga to Panasonic printers.
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7) PANASONIC COLOUR RIBBON
Colour ribbon for KXP 2180/ KXP 2123.
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8) PANASONIC BLACK RIBBON
Black ribbon for KXP 2180/ KXP 2123. **INDI PRICE £9.99**

SAVE ££££'S ON THE FOLLOWING ACCESSORY PACKS

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PANASONIC COLOUR RIBBON PACK
Contains 6 colour ribbons for the KXP 2123 RRP £119.99.
INDI PRICE £34.99 SAVE £30!!!

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PANASONIC RIBBON PACK
Contains 2 black and 4 colour ribbons for KXP 2180/ KXP 2123.RRP £99.99.
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ALL NEW 32 - BIT AMIGA
LOOK A1200 PRICE CRASH
AMIGA 1200
COMIC RELIEF PACK

COMIC RELIEF PACK

The event may be over but the fund raising still goes on. If you're looking for the late Amiga technology then this is the starter pack for you. Based around the outstand A1200, this pack also gives you sleepwalker, a most addictive platform game from oc software. You'll be pleased to know that every one of these packs purchased ra another £10 for Comic Relief.

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The Amiga 1200 supplied by Indi Direct Mail now includes the official (legal) Commodore installation disk and hard drive utility manual. Indi are proud to be an official supplier of Amiga 1200 Hard Drive systems, that include the official software, documentation and on - site warranty.

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AMIGA A4000

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PAGE)

It's here - The new Amiga 4000/030

The NEW Amiga 4000/030 features a EC68030 processor running at an incredible 25Mhz, and upgradable at a later date to a faster processor. The 4000/030 has a powerful 2 Mb of 32 - bit RAM (1 Mb chip & 1 Mb fast) expandable to 18 Mb using industry standard 32 - bit Simms module. In line with the Amiga Flagship 4000/040 the 4000/030 features the new AGA graphics chipset, giving you a massive pallet of 16.8 million colours. A range of hard drive options are available from 80 - 240 Mb and includes a SCSI option.

4000/030 80 Mb HD INDI PRICE £929.99
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4000/030 240 Mb HD (exclusive to INDI)
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A full range of approved upgrades are available for the 4000/030, including additional memory modules, hard drives, PC bridge boards, FPU's (68881 &68882)and the 24 - bit Opal Vision graphics and video system

NEW MONITOR RANGE

THE NEW DUAL SYNC1942 Monitors have been specially designed for the New Amiga 1200 and 4000 computers. Both monitors feature built - in stereo speakers.

INDI PRICE
1940 Monitor £279.99
14 inch screen size.- 0.39 mm dot matrix

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INDI PRICE £17.99
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Parnet Adaptor for CDTV

Connect a CDTV player to any Amiga, and access the wo of CD - ROM software.The Parnet interface and softw will allow the Amiga CDTV to be used as a CD - RO drive withe any Amiga and will give any Amiga owner acc to the vast range of CDTV software currently available. The CDTV player offers excellent value for money wh compared with a standard CD - ROM drive and interfa Most CD - ROM drives will set you back over £400 wh CDTV will cost you less than £300 and will play audio CD in addition to CD - ROM / CDTV disks your Amiga, int face cable and PD disk with driver software for your CD player. **(The Parnet adapter can be used t link any Amigas together)**

INDI PRICE £39.99

A4000/030 + CDTV + 1942 MONITOR + PARNET. INDI PRICE £1599.99
CDTV + PARNET.
INDI PRICE £329.99

AMIGA A600 PRICE CRASH

THE WILD THE WEIRD AND THE WICKED A600 is an ideal starter pack containing a considered mix of software, making the most of the Amigas capabilities.

PACK CONTAINS:
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- 1 Mb Memory
- Pushover: Grandprix
- Silly Putty: Deluxe Paint III
- Mouse and Manuals

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A600 - SD A single drive Amiga for those of you requiring a basic A600 at a very competitive price.
PACK INCLUDES: A600 single drive, built in TV modulator, 1 Mb memory, 12 Months a home service
INDI VALUE ADDED FREE * Kick Off 2 * Pipemania * Space Ace * Populous * Microswitched Joystick

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A600 EPIC PACK (40 Mb HD) PACK INCLUDES:
A600 Hard Disks (40Mb) * **1 Mb Memory** * **Epic** * **Rome** * Myth * Trivial Pursuit * Amiga Text * Deluxe Paint III * 12 Months at home service.
PLUS INDI ACCESSORIES PACK

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* Microswitched Joystick * Lockable Disk Box * Disk Wallet * 10 Blank Disks * Kick Off 2 * Pipemania * Space Ace * Populous * Zapsac A600 Carry Case * Zappo T - Shirt.

INDI PRICE £26.99

12 MONTHS INTEREST FREE CREDIT AVAILABLE ON CDTV EXTERNAL HARD DISK SUBJECT TO STATUS. LOW INTEREST CREDIT AVAILABLE ON ALL ORDERS OVER £200

AMIGA CDTV THE MULTIMEDIA COMPUTER TOTAL HOME ENTERTAINMENT SYSTEM

DIRECT MARKETING ASSOCIATION
COMMODORE AMIGA CDTV

MONITOR NOT INCLUDED

AMIGA
AUDIO
MULTI MEDIA

The problem with any new product is that it always takes time for everyone to realise its full potential.
CDTV is no exception and in our opinion everything we have read does a pretty poor job of explaining just what CDTV can do and why it is so exciting.

THE INDI GUIDE TO CDTV

IT'S A CDTV PLAYER - Yes, it will play all your Primal Scream, Paverotti, Pink Floyd and any other CD you care to mention in superb high quality stereo, with infra red remote control.
IT' AN AMIGA - Plug in the keyboard, switch on the external disk drive and the colossal range of inexpensive Amiga Software can be used on CDTV.

IT'S A MULTIMEDIA SYSTEM - Just imagine, stereo sound, images and text all on screen. It asks a question, you respond, it responds - truly interactive! Each CD disk holds hundreds of megabytes of data with instant optical access. The whole of Hutchinsons encyclopeadia fits on to one disk. This interactive system is a unique aid for Education, Business or Leisure. The future is here!

PACK CONTENTS AS STANDARD * Amiga CDTV Player * CDTV Keyboard * CDTV 1411 3.5" Disk Drive * CDTV Infra Red Remote Controller * CDTV Wired Mouse * CDTV Welcome Disk * Manuals * Fred Fish CDTV Disk

INDI VALUE ADDED FREE * Lemmings CDTV (£34.99)
* Blues Brothers (£12.99) * Pipemania, Populous, Kickoff 2, Space Ace.

INDI PRICE

PACK AS SHOWN £329.99

PRICE CRASH ~~£399.99~~

MULTI MEDIA PACK WITHOUT INDI VALUE ADDED £299.99

CDTV CONNECTS DIRECTLY TO YOUR TV SET

AMIGA CDTV ACCESSORIES

THE BRICK - ETTE

Just plug in the brick - ette and use any wired Amiga compatible joystick, mouse of trackball device on the Commodore CDTCV. The built - in 8 - bit Micro Processor gives the Brick - ette big smarts in a tiny package and makes it easy to use just plug into the remote port and it is ready to go with real time mouse or joystick movement on your CDTV. No loading of driver programs or software. No switches for mouse or joystick. Special settings (with mouse) allow you to blast away with with three rapid fire modes & dual fire buttons. Comes complete with Python Micro switched joystick.

INDI EXCLUSIVE £49.99
With two joysticks **£59.99**

BLACK 1048S MONITOR

At last the CDTV Monitor you have been waiting for. The original and best selling colour/ stereo monitor from Commodore is now available in black to complement your CDTV

INDI PRICE £189.99
(or £179.99 when purchased with CDTV Multi Media pack

If you are thinking of buying CDTV or already own one you'll be pleased to know that INDI stock all CDTV accessories and software that are available from manufactures. We believe in CDTV and we therefore continue to support this exciting product. You will always have a source of product for your CDTV from INDI.

L to R

CDTV Encore SCSI Controller + Internal Mount	£109.99
CDTV Internal Genlock	£149.99
Black 1084S Colour Stereo Monitor	£189.99
(When purchased with CDTV Multi - Media Pack)	£179.99
CDTV Remote Mouse	£49.99
Scart TV / Monitor Lead (inc Stereo Phono Lead)	£14.99
Megachip - 1Mb Upgrade Chip RAM Upgrade for CDTV	£159.99
CDTV Trackball	£69.99

AMIGA CDTV EXTERNAL HARD DISK DRIVE

You've got the CDTV, you've got the keyboard and the floppy disk drive - for a total computer solution all that's needed is an ultra fast hard disk drive.
The CDTV - HD unit boasts a massive **85 Mb of hard disk** storage with lightning fast access times through its SCSI interface. The unit comes complete with Workbench 1.3 and all necessary cables.

INDI PRICE
£299.99

12 MONTHS INTEREST FREE CREDIT ON THIS PRODUCT. PHONE FOR DETAILS (SUBJECT TO STATUS)

AMIGA CDTV SOFTWARE

ARTS AND LEISURE

Advanced Military Systems	£29.99
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Guinness Disc of Records	£34.99
Animals in Motion	£29.99
Connoisseur Fine Arts	£34.99
Fruits & Vegetables	£34.99
Trees & Shrubs	£34.99
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EDUCATION

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A long Hard Day at the Ranch	£34.99
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Super Games Pack	£24.99
Tiebrake Tennis	£19.99

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Karaoke Fun Hits I	£14.99
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Music Maker	£26.24
Blues Brothers (Audio CD only)	£10.99

REFERENCE

American Heritage Dictionary	£49.99
Complete Works of Shakespeare	£29.99
Illustrated Holy Bible	£29.99
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COVERDISK 64

AMIGA
ADVANTAGE
By Gold Disk
PLUS

This month's coverdisk is crammed to the brim with *Advantage*, an ace spreadsheet. Plus, there's *VMorph*, a nifty morphing program.

IF YOUR DISK WON'T LOAD

If your coverdisk doesn't seem to work as it should, then follow this simple guideline. Firstly, remove all unnecessary peripherals, such as printers, modems, etc. Follow the instructions on these pages to the letter, and if after that you find that the disk still doesn't work, call the PC Wise helpline on 0685 350505 between 1030 and 1230 Monday to Friday. If they advise you that the disk is faulty, then pop it in an envelope with a covering letter explaining what the problem is to: CU DISK RETURNS, PC WISE, DOWLAIS TOP BUSINESS PARK, MERTHYR TYDFIL, MID-GLAMORGAN, CF46 2YY. Please include 28p per disk to cover postage and packing (55p for overseas readers). Your disk will be tested and a new, working one dispatched to you as soon as possible. Please note that neither we nor PC Wise accept responsibility for any disks damaged due to negligence on the part of the user.

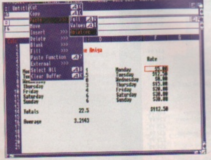
ADVANTAGE

Boot from the working copy you have made of the Coverdisk and double-click on the *Advantage* icon. You should now be looking at Gold Disk's versatile spreadsheet program.

If, at any time, during this tutorial you enter something incorrectly, then a tap on the ESC key will usually restore order.

LAYOUT

At the top of the screen is the program's title bar. Below this is the current spreadsheet window labelled 'Untitled'. Just below that is a box containing the text A1. This is the 'Current cell indicator', and A1 refers to the red box in the work area. This is the current cell. The work area is bounded along the top by columns labelled A,B,C..., and down the left hand side by rows labelled 1,2,3... The spot where column A meets row 1 is cell A1, and where column B meets row 2 – cell B2, and so on. If you press the cursor keys you can move the red box around the spreadsheet. Another way to move this box is to click on part of the work area.



e Amiga

			Rate
	1	Monday	$5.00
	.5	Tuesday	$12.50
	0	Wednesday	$0.00
Thursday	3	Thursday	$15.00
Friday	4	Friday	$20.00
Saturday	6	Saturday	$30.00
Sunday	6	Sunday	$30.00
Totals	22.5		$112.50
Average	3.2143		

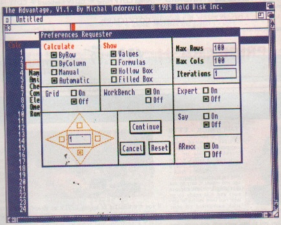
A comprehensive range of editing tools make *Advantage* very easy to set up with complicated spreadsheet layouts. All types of entry can be cut and pasted in full, or relative form.

The cell under the mouse pointer then becomes current.

The spreadsheet itself is larger than the window that surrounds it. If you want to move to a cell outside the window then click on the arrows at either end of the scroll bars, or you can enter the co-ordinates of the cell directly if 'Commands/Goto Cell' is chosen from the pull-down menu. These cells are the locations into which you enter all your figures, text, and formulae. For example, let's draw up a simple table of the number of hours I spend per day on my Amiga.

First of all we put a title for the spreadsheet in the work area. Click on cell B2 and type 'Hours spent on the Amiga per day'. This text appears in the cell contents box. Now press RETURN and the label appears on the spreadsheet. Notice the leading space, this is to inform *Advantage* that text is being entered.

Although the label is larger than the cell it occupies, it is displayed in full. If something was put into cells C2 or D2 then it would be truncated. To make a column wider you click on the vertical black line that separates each column, and with the left mouse button held down drag it left or right. A vertical cursor aids your positioning. A value also appears in the message box. This is the cell width. The column that the current cell is in can also be altered in width by selecting 'Options/Column Width'.


The Advantage, V1.1. By Michal Todorovic. © 1989 Gold Disk Inc.
Untitled
A3
Continue
Cancel
Reset

Preferences Requester

Calculate
☒ ByRow
☐ ByColumn
☐ Manual
☒ Automatic

Show
☒ Values
☐ Formulas
☒ Hollow Box
☐ Filled Box

Max Rows 100
Max Cols 100
Iterations 1

Grid ☐ On ☒ Off
WorkBench ☒ On ☐ Off
Expert ☐ On ☒ Off
Say ☐ On ☒ Off
ARexx ☒ On ☐ Off

The preferences screen allows you to choose the direction the current cell indicator will go in after Return is pressed. It also sets the size of the spreadsheet, and the order of calculation, among other things.

Next, click on cell A4 and enter 'Monday'. Press Return and enter 'Tuesday'. Carry on doing this for the other days of the week. Click on A12 and enter 'Totals'.

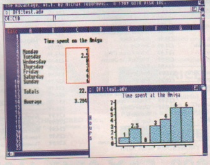
Click on C4 and, using the same procedure that we used for entering the days, enter any numbers you like. These are our hours spent in front of the Amiga. The cell in this column on a line with 'Total', C12, needs to have the sum of the values in it. So we have to enter a formula.

SECRET FORMULAE

Click on C12 and enter '=SUM(C4:C10)'. The first equals sign tells *Advantage* that a formula is being entered. The built-in function SUM is used to total the values in the column from C4 to C10, hence (C4:C10). It's simply a truncated way of entering the following formula: =(C4+C5+C6+C7+C8+C9+C10).

Having pressed Return you should now see the total number of hours I may have spent this week in front of my Amiga.

Another useful function is AVG. Click on A14 and type in 'Average'. Now click on C14 and enter '=AVG(C4:C10)'. After pressing



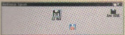
Time spent on the Amiga

Monday	1
Tuesday	2.5
Wednesday	0
Thursday	3
Friday	4
Saturday	6
Sunday	6
Totals	22.
Average	3.214

Advantage can be opened in its own custom screen, or on Workbench by altering tooltypes. Interlace is supported too.

YOUR QUICKSTART GUIDE TO LOADING DISK 64

WRITE PROTECT YOUR DISK! Before you do anything, write protect disk 64. To do this, move the black tab in the corner so that you can see through the hole.



1. Insert Disk 64 into your internal drive, and switch on the Amiga.

2. When the Workbench screen has loaded, you'll see the CU 64 Coverdisk icon at the top of the screen. Double click on it with the left mouse button.

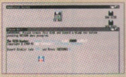
3. A window will appear containing four icons. Double click the one marked Advantage 1.

4. When the disk light goes out, a prompt will tell you to insert a disk into DF0:. Remove the Coverdisk and replace it with the first of your three blank or spare disks.

5. Press RETURN once you've swapped the disks. When the file has been unarchived, you'll be asked to replace the Coverdisk. Do so, then return to step 3, clicking on the Advantage 2 icon this time.

6. Put the original Coverdisk in a safe place, and reboot from the first of your unarchived disks.

7. Double click the *Advantage* disk icon, and then double click the *Advantage* program icon to run the application.

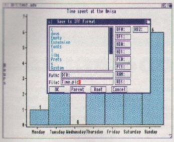


DISK VIRUSES

CU AMIGA makes every effort to ensure that viruses do not get on to our disks, and we aim to include a virus checker on the disk whenever possible. Unfortunately, because of the nature of viruses, the virus killers can only be updated to include a new strain when it has already become known. Fortunately we always have the most advanced virus checkers available when the disk is compiled and every program goes through rigorous testing before it appears on our coverdisks. However, we can accept no responsibility for possible damage incurred by viruses which may have escaped our attention.

IMPORTANT

Amiga users with only 512k of memory cannot use the full *Advantage* program. They must use the separate modules Calc and Graph. All users should examine the Read_Me file for helpful information.



Path: DF0:
File: Time.pic

The chart save requestor is similar in format to that used by the spreadsheet itself for both loading and saving.

RETURN the average number of hours spent per day is displayed.

The AVG function operates on the list in the brackets. In this case, (C4:C10) is a range of cells, but we could have a variety of cells from which to draw our data. A list can be a series of cell names, values, or ranges separated by commas, or a combination of all three – (A1:A5, 5,D6,29,E8,F3:H6). This last range F3:H6 represents a block of data that includes cells F3 to F6, G3 to G6, and H3 to H6.

CHARTING THE UNKNOWN

Ranges can be selected on the work area by clicking on the first cell in the range and, with left mouse button held down, dragging out a rectangle to encompass our desired number of cells.

We will do this now to create a graph. Click on C4 and drag out a rectangle that encloses the column of figures down to C10. Now select 'Commands/New_Chart'. A requestor will appear with 10 different types of chart to choose from. Each suits a particular data set. In our case, the vertical bar chart is most appropriate. Click on that icon and a requestor will appear. Type in our title again. We will not need a sub header, or an x-axis label, as it will be self-explanatory. But we will label the y-axis, so type in 'Hours'.

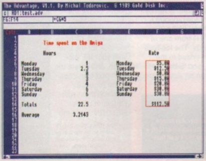
The check box 'Ticks' is already on, but we need to tell *Advantage* where to find the labels for our x-axis. These are the days of the week and are to be found in column A, so the start value should be changed to 1. Column B would be 2 and so on.

Click on 'Values', 'Floating', and 'Overlap', then on 'Continue'. Our graph is now drawn. If you want to experiment with the settings, then select 'Chart Control/Chart Prefs'. At the bottom of this menu is 'Set Num Ticks'. Select this and change the value in the requestor to eight. The graph is redrawn with a better range of values on the y-axis.

Our graph can now be saved to disk or printed. If you choose 'File/Save as IFF' a requestor will appear. Here you must specify which drive, if you have more than one, you wish to send the picture file to. This is done by clicking on a drive button. Everyone will have df0: and RAM: as a minimum.

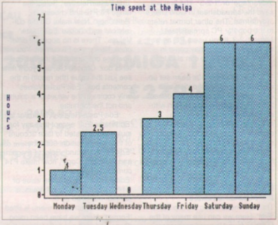
Enter a destination directory, if required, and a filename and click on 'OK'. The saved picture is in a format compatible with all picture viewers, and paint programs such as *Deluxe Paint*.

The two other pull-down menus on the chart window's title bar control the fonts the text is displayed in, as well as its colour, and the colour of the chart, the background, borders, axes, and so on. Experiment is the best advice here. We can use the depth gadgets in the top right hand corner of the window to get back to the spreadsheet. Or you can resize the window and drag it to one side by clicking and holding the title bar.



```
The Advantage, V1.1. By Michal Todorovic. © 1989 Gold Disk Inc.
c| HD1:test.adv
F6:F14          =C6*5

     Time spent on the Amiga

     Hours                          Rate

Monday            1     Monday        $5.00
Tuesday         2.5     Tuesday      $12.50
Wednesday         0     Wednesday     $0.00
Thursday          3     Thursday     $15.00
Friday            4     Friday       $20.00
Saturday          6     Saturday     $30.00
Sunday            6     Sunday       $30.00

Totals         22.5                 $112.50

Average      3.2143
```

Numeric notation can be in the standard General format, scientific, percentage, or currency. The default $ sign can be changed for the pound via a tooltype entry.



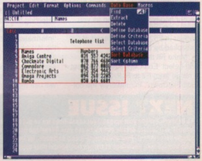
A finished chart ready for printing or incorporation into a slideshow for presentation. There are numerous controls over fonts and colours should you not like the defaults.

SAVING AS EASY AS 1-2-3

Spreadsheets are saved in a similar fashion to that I described for the charts. In this case the two options are 'Project/Save' and 'Project/Save As'.

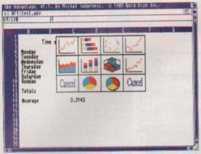
'Save As' is always the first to be

The ability to sort a database and find and extract data from it is not usually considered to be part of a spreadsheet's functions.



```
c| Untitled
A4:C10          Names

          Telephone list

Names                 Numbers
Amiga Centre          031 557 4242
Checkmate Digital     070 766 4684
Commodore             062 877 0066
Electronic Arts       075 354 5442
Omega Projects        094 268 2205
Rombo                 050 646 6601
```

»



Ten different chart types – horizontal, vertical, 3D and hi/lo bars, stacking and plain x/y, scatter chart, plain 3D, and exploding pies.

used when preparing a spreadsheet. Even if you have not put anything to paper, as the saying goes, it is best to define the destination and filename of your work.

There is a choice of two sub-items when this selection is made – 'Advantage' or '1-2-3'. The first will save the spreadsheet in Gold Disk's .adv format. The other format refers to the popular PC spreadsheet, *Lotus 1-2-3*. If you use a PC as well as your Amiga this may come in handy as *Advantage* can also load '1-2-3' files.

Once 'Save As' has been set up, any use of the 'Save' option will automatically send the spreadsheet file to the selected destination without the appearance of the file requestor. This option should be chosen regularly so that, should something happen, you have a copy of your work that will only require a few minor updates. Better than no work at all.

EDITING THE SPREADSHEET

The next menu along the top bar is 'Edit'. Here we can use many of the facilities found in word processors. Select the range A4:A10, our column containing the days of the week, by dragging out a rectangle around it.

Now choose 'Edit/Copy'. Click on E4, then select 'Edit/Paste/Full'. Our list of days of the week is put into column E. Position the current cell on row 2 and select 'Edit/Insert' twice. Two rows are inserted giving us more space between our title and the values on the spreadsheet. Select B4 and type in 'Hours'. Now select F4 and type in 'Rate'. Move the current cell down to F6 and enter the formula '=C6*5'. This is going to be our hourly rate. As soon as you pressed Return you will see a value appear in F6. This is the result of C6 multiplied by 5.

Make F6 the current cell again and select 'Edit/Copy'. Now drag out a range from F7 to F12. Select 'Edit/Fill/Down'. Immediately the column is filled with the values in C7:C12 multiplied by 5.

The 'Fill' facility will place a formula in a column ('Down') or a row ('Right') without you having to type it in repeatedly. All references to a particular cell are altered relative to the position of the formula. So, although I entered '=C6*5', when *Advantage* pasted the formula to row 8 it adjusted it to be '=C8*5'.

You may have noticed two other sub-items, 'Edit/Paste/Values' and 'Edit/Paste/Relative'. Select the range F6:F12 and choose 'Edit/Copy'. Now make G6 the current cell and choose 'Edit/Paste/Values'. There is no apparent difference. Now make F6 current. You will now see our formula in the cell contents box. Choose G6, and you'll now see just the value (the result) in the contents box. 'Edit/Paste/Values' only copies in the values of a column and not the formulae.

'Edit/Paste/Relative' is similar to 'Edit/Paste/Full' except that any formulae are adjusted to take account of their new position – like the 'Edit/Fill' command. Select F6 again and then 'Edit/Copy', now make F14 current and choose 'Edit/Paste/Relative'. The value of C14, the total number of hours, is printed multiplied by 5.

The next pull-down menu is titled 'Format'. Here we have been using 'General' for all our calculations, but there are other formats we could choose from. Currency is probably the other one you will use most. Select the range F6:F14 and then choose 'Format/Currency'. All the values now have a dollar sign in front, and two decimal places.

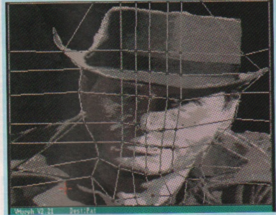
CHANGING CURRENCY

The dollar sign is default because Gold Disk are a Canadian company. The currency sign can be changed, but not from within the program. This is done before the program is run by selecting the *Advantage* program's icon and choosing 'Info' (WB1.3) or 'Information' (WB2.0+) from one of the Workbench menus. The tooltype 'Currency=$' is then edited to the sign of your choice, and 'Save' clicked on. From then on *Advantage* will use that sign.

NEXT ISSUE

To help you expand your spreadsheet capabilities we've put together a further *Advantage* tutorial. It'll feature details on how to use your Advantage program for functions other than a simple spreadsheet. How about using it as a database, for instance? If you can't wait that long why not take advantage of our special manual offer opposite?

VMORPH



An old CU AMIGA favourite, Patrick McGoohan, is about to be subjected to some rather embarassing morphing.

Unarchive the *VMorph* program as described in the 'Quickstart guide' box, but click the *VMorph* icon instead of the *Advantage* icon.

VMorph is a public domain morphing program. It transforms any lo-res 16-colour IFF picture into any other, over a series of frames. Instead of simply fading one into the other, it can move, stretch and shrink specific areas of one image until they match the other. For example, the eyes of one face could turn into the eyes of another, even if they were at different places on the screen.

Unfortunately there wasn't enough room on the disk to include any IFF pictures for you to work with. If you have *DPaint*, take a couple from there. Make sure you convert them to lo-res and 16 colours.

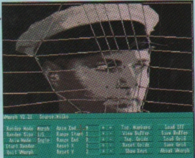
MORPHING

Before you get stuck in, beware of a bug that crashes the program if you click on the CANCEL box in the file requestor section. Bear with it – it is PD!

Click on LOAD IFF from the control panel. Leave the disk in the drive until the directory listing has loaded. Change the disk for the one with your IFF pictures, and delete the path and filenames in the requestor. Replace them with DF0: and press RETURN. Load the first picture, then once you're back on the main screen, click the right mouse button – this switches you to the alternative screen. Now load the second picture.

With both pictures loaded, you have to define a grid for both. Clicking the right button with the pointer at the top or far left of the screen introduces another line to the grid. The left button moves the points where the lines cross. Flip between the pictures, setting the points to corresponding parts of the two images. The more points you use, the more accurate your morph will be. Hit the RENDER button, give your morph a file name, and the 'tweens' will be generated and saved.

To convert the files into an animation, load any version of *DPaint* that supports animation. Select the first picture of the sequence from the LOAD PICTURE option, and enter 8 as the number of frames. Press 6 on the main keyboard to run the animation.



The milky from the TV ad is to be the image into which Patrick will morph. Here, we're setting up the grid.

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COVERDISK 65

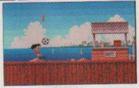
In any other context, using the words 'balls' and 'cockpit' in the same paragraph might be awkward. Not so here, since this month's stunningly excellent coverdisk contains not only a whole level of Krisalis' *Soccer Kid*, but a complete mission from MicroProse's *F117A Stealth Fighter*. Get ready for the disk of the century.

65
AMIGA
SOCCER KID
EXCLUSIVE
F117A
1Mb ONLY

SOCCER KID

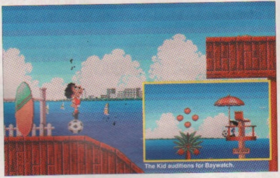
What could be finer than a complete level from a forthcoming platform game, containing superb graphics, wonderful sound and a really clever control system featuring footballs? How about a complete *unique* level of a forthcoming, etc. etc? That's right, with many thanks to the folks at Krisalis, we are able to bring you CU Amiga's very own level of *Soccer Kid*, one you won't find anywhere else.

The task is simple – run, jump and kick your way around the level, searching for 11 collectible soccer cards (you know, the things you used to get in bubblegum packs). Using the kind of football skills that would make Gary Lineker weep, you have to progress through the built-up area of town, then move out onto the beach, taking care of bad guys along the way. The moral of the tale is 'If it moves, avoid it,' but if you find that a bit difficult try kicking the ball at it. It's fun, it's fast and it's thoroughly addictive. So what are you waiting for? Get kicking.



Not only has *Soccer Kid's* ball been signed by all his footballing heroes, it's also his only weapon in the game. Kick it at things and usually they'll meet their fate.

Jumping on top of the ball allows you to reach new heights of gaming fun.

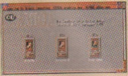


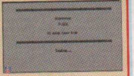
The Kid auditions for Baywatch.

YOUR QUICKSTART GUIDE TO LOADING DISK 65

Four simple steps are all that lie between you and gaming excellence. Follow these guidelines and you'll soon be enjoying yourself in the only way possible with a CU Amiga coverdisk:

① Switch off your machine for at least 30 seconds, then turn it on again (stop me if I get too technical). When the Workbench screen appears put the disk into the drive and wait for it to load the menu.





② When the menu appears you have a simple choice. Press F1 for the *F117A* demo, press F2 for *Soccer Kid*, or press F3 to view the *Rave* demo. Alternatively you can click on the required button with your mouse.

③ Wait for a moment while the game/demo in question loads.

④ The demo appears in all its glory. If you choose *Soccer Kid* the pilot will be in a football strip and kicking a football.

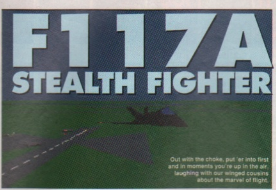
F-117A
STEALTH FIGHTER 2.0
(Press Any Key)

BALL TRICKS

Soccer Kid's such a whiz with his ball that he can perform oodles of tricks and still not get arrested! Here's a quick guide to ball control.

ACTION	JOYSTICK CONTROL
Produce New Ball –	Press and hold fire if the ball escapes your grasp and a new one should soon appear.
Running –	Move the joystick, move the kid.
Jumping –	While running, push the joystick up and away he goes.
Standard Kick –	Used to dispose of bad guys. While running in possession of the ball, press fire to 'knock it down the field'.
Ducking –	Simply pull down while stationary and the Kid will duck beneath whatever approaches.
Slide Tackle –	While running, pull down on the stick and the Kid will start sliding about.
Jump Down –	To jump down from a platform just press fire while ducking.
Power Header –	When the ball is airborne, press fire to knock it with yer nut.
Trick Shot Mode –	When stationary and in possession of the ball, pressing fire puts you in Trick Shot Mode. You can now do the following:
Super Shot –	Press fire and push the stick in the direction you're facing to volley the ball.
Trick Header –	Press fire and push up to start heading the ball.
Ball Balance –	Pressing fire while pulling down will balance the kid on top of the ball. Left and right movements while keeping fire pressed will then cause him to 'ball walk' whilst pushing up will cause a super jump.
Overhead Shot –	While in Trick Header mode, wait until the ball is at full height then push left or right to resemble Pele in Escape To Victory.

F117A STEALTH FIGHTER



Out with the choke, put 'er into first and in moments you're up in the air, laughing with our winged cousins about the marvel of flight.

The *F117A Stealth Fighter* – the world's most secretive plane. It can't be picked up on any radar. Missiles have a hard time locking onto it. Heck, even its own pilots have difficulty finding it in the hangars. You, however, simply have to load this month's coverdisk to take the controls for a complete mission in MicroProse's forthcoming simulation par excellence.

Anyone familiar with the basics of flight sims will be able to just jump straight in and start swooping, splitessing and barrel rolling with ease. Those of you of a more tentative nature should read on for a few basics on how to stay alive in the air.

The first thing you have to remember is that you won't be able to shoot other aircraft down with anything other than guns unless you open the weapon bay doors. To target something, first put the cockpit into the correct mode (Air to Ground or Air to Air), select the correct weapon (sidewinders for aircraft, everything else for ground targets) and press the Designate New Target button. The target will appear in the right-hand display screen and a square should appear on the HUD, indicating the target's position. Now, just wait until the word 'LOCKED' lights up and press fire. All being well you should be alive and he shouldn't.

Sitting on the runway in the world's most sophisticated piece of aerial hardware. Can't seem to find the ignition key though.

So, now you know how to do it. Now for what to do it to. You have two options:

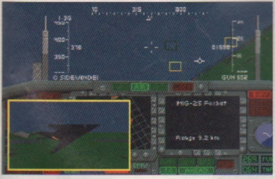
THE MISSION – OFFICIAL

Take off from USAF base at Neuberg. Fly to 15,000ft and head for Liberec. Destroy the headquarters at Liberec and turn for Pilsen. Destroy the Mobile SAM Radar at Pilsen and turn for home. Land at Neuberg.

THE MISSION – UNOFFICIAL

Take off from USAF base at Neuberg. Target anything that moves. Fire missiles, guns and bombs until you run out. Press Alt R to resupply yourself (i.e. cheat). Fire all over again. Land when your tea's ready. Oh, and have a look for some ground depots as you'll get the chance to view a sign showing your favourite magazine's logo.
The choice, as Bob Holness is fond of saying, is yours.

See those red lights on the dashboard? They mean I'm in trouble. See those enemy planes on the radar display? They mean I'm in big trouble!



KEY LIST

As with any flight sim there's simply hundreds of buttons to choose from. Without a keyboard overlay it's not too easy to tell what's what. So, here's a list of what key does what.

Flight Controls	Corresponding Key
Movement Controls	
Pitch and Roll	Cursor keys or Joystick1
Landing Gear Up/Down	6
Auto Pilot	7
Extend/Retract Flaps	9
Brakes On/Off	0
Increase Throttle	+
Decrease Throttle	–
Maximum Throttle	Shift and +
Minimum Throttle	Shift and –
View Waypoints	F7
ILS Display	F9
View Mission Orders	F10
Defensive Controls	
Flares	1
Chaff	2
IR Jammer	3
ECM	4
Decoy	5
Offensive Controls	
Bay Doors Open/Close	8
Fire Cannon	Backspace or Joystick Button 1
Fire Missile/Bombs	Return
Change Weapon Bay	Space
Track Camera Ahead	/?
Track Camera Rear	>.
Track Camera Right	<,
Track Camera Left	M
Designate New Target	N
Select Target	B
Zoom Tactical Map	Z
Unzoom Tactical Map	X
Change HUD Mode	F2
Simulation Controls	
Zoom External View	Z
Unzoom External View	X
Pause	Alt and P
Detail Level Adjust	Alt and D
Training Mode	Alt and T
Resupply (Training Mode only)	Alt and R
Cockpit View	F1
Slot View	Shift and F1
Chase Plane View	Shift and F2
Side View	Shift and F3
Missile View	Shift and F4
Tactical View	Shift and F5
Inverse Tactical View	Shift and F6
Multi View	Shift and F7

CYLON RAVE

Finally, for this disk, we bring you the *Cylon Rave* demo from Dimension X, a fast moving mix of house music and flashing graphics. However, we must warn anyone that suffers from epilepsy or is particularly affected by rapidly flashing images, DO NOT load the demo, as it may prove harmful.

It's a nice sentiment but since it flashes past your screen in about a millionth of a second it is kind of wasted.

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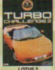
LOTUS 2
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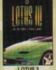
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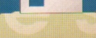

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Animated Antics

When dealing with the Amiga we often consider the image quality of static frames – the pixel resolution, the colour depth, the screen mode and so on. But there is another dimension to Amiga art, the dimension of time...

Animation is the display of images in a sequence, usually at such a speed that the human brain is unable to see the images singly – only as a whole, an animation. As computers have infiltrated the graphics media, so they have become more drawn into the animation arena.

In some examples, animations are now being generated completely on computers, adding another layer of abstraction to the artistic process. Images are being created from data that has never existed in the real world, but has been completely generated in the minds of men and the RAM of machines.

But it doesn't all go that way. In many cases computers are used to assist traditional animation techniques, and even to train budding animators in colleges around the world. Because of its unique features and amazing value for money, the Amiga has established itself as an important tool in this emerging industry.

CAMERAMAN
PROD.
TAKE

Many professional artists are starting to realise the Amiga's potential as a graphic's powerhouse. Not only does it produce high quality stills – it can make them move too! Join Nick Veitch as he takes a tour around the Amiga's animation tools.

COMPUTER ASSISTED ANIMATION

Even when a computer is not used as a central component in the replay or generation of the animation, it is still a very useful tool for the artist. Many traditional artists find it difficult to create art on the computer, but would like to use the advanced editing facilities available on automated computer-controlled equipment.

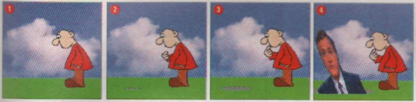
One of the more tedious ways of doing this, but nevertheless a quite popular one amongst non-computer types, is using a digitising tablet or arm and tracing-in line drawings into a computer-based art package. This can be done quite inexpensively and easily on a machine like the Amiga – all you need is a copy of *DPaint* and a graphics tablet, such as the Genius DT. All that is required is to place the artwork under the protective covering and trace over it with the pen. Although reliable, this process is laborious and time consuming. This rather defeats the object a little, which is about making the process more efficient after all.

A more sensible option is to use a scanner. Artwork can be prepared and then fed into a scanner a frame at a time. The only difficulty here is that, obviously, the computer bitmapped images will all have to register properly if they are to form part of a meaningful animation. This means that they all have to be scanned in exactly the same position to ensure that the images match up properly. This can be a bit tricky, even on an expensive flatbed scanner. If you are intending to feed the frames through a multiple document scanner there is virtually no chance that the frames will line up.

The images can always be realigned in an art package later, but again this introduces an extra process – more time, more effort, less productivity. Since it takes a professional animator a day to create five complete frames, time is always of the essence.

A more popular way is to digitise the images using a video camera. The camera is mounted on an overhead tripod, pointing down at an animation base. The base itself would contain locator pegs to ensure that the frames were all located in precisely the correct position. Since the camera would be set up for a specific frame size there would be no need to change its position. Lighting can prove to be a problem, but a few bright lights attached near to the base should solve this.

The major advantage of entering images into the computer this way is that this is the way animations themselves used to be recorded. The camera may be of the CCD video variety rather than film and the buttons to be pressed may be on a computer keyboard instead of at the end of a shutter release cable, but the principals are the same.



Using an Amiga with a program such as *Deluxe Paint*, the computer animator can quickly create a moving 'rough' of the cartoon, without resorting to photographs, video or even ink. The use of digitised images can add a certain Monty Python feel.

COMPUTER GENERATED ANIMATION

When the computer revolution reached the national media in the late '80s it didn't just change the way we lived, it changed the way the media itself operated. Nowadays newspapers are designed on computers, and News At Ten wouldn't be worth broadcasting without animated computer graphics. Having infiltrated the establishment, computer graphics moved down market to animated title sequences and game shows like Catchphrase.

The impact of computer generated animations was heightened when what would have taken 20 traditional artists a month to produce could be churned out by one bloke in an afternoon – with the aid of some very expensive micro-electronics. It was the birth of a new artform.

Morphing

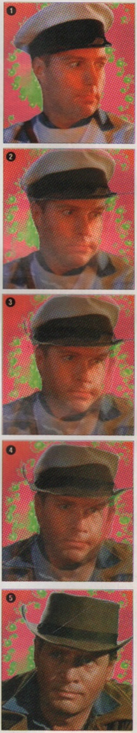
Morphing hit the headlines a few months ago as the fashionable video effect to be seen with. It was used in Terminator 2, it was in TV commercials – it even made it onto Tomorrow's World. And as if by magic, at least three Amiga morphing packages hit the shelves.

Morphing can occur in two ways – either as a post-production special effect, or as part of the rendering process. Software such as *CineMorph*, *MorphPlus* and *ImageMaster* enable post-production morphing, in other words you feed in the still images (either one offs, or sequences) and after some sums the morphed images are produced.

These effects work particularly well with moving video – such as two live shots of faces talking. This effect has been used in several music videos, and goes like this: The two separate sequences of Person A and Person B are fed into the software, and control points are attached to important features such as eyes, mouths, ears and hairline. The morphing software thinks about it, and produces a third sequence which starts with Person A talking, who then mysteriously transforms into Person B by the end of the sequence. The effect is much more than a simple dissolve blend, as the various parts of Person A's face seem to re-arrange themselves to become Person B. It's a good effect, but can be very easily over used.

Interestingly, top Amiga rendering packages all feature morphing effects which can be applied to objects. Morphing an object is an excellent way to add life to an otherwise dull shape. For example, think of the many TV commercials where the product is a box of washing powder, household cleaner or hair gel. Watch as the box bounces around a rendered super-clean kitchen with a life of its own, deforming as it moves and/or speaks. One way to create this effect is to model the product in a rendering program, and then morph it between several key positions – the software can automatically carry out all the in-betweening calculations.

Creating the product object is remarkably easy – simply scan in the artwork from the box and wrap it around the object as a brushmap. The latest batch of Amiga rendering software is ideally suited to such operations, as they now allow the brushmaps decorating the objects to stretch and deform as the object moves. Previously, the brushes would remain intact as the object squirmed beneath them.



In this sequence *MorphPlus* was used to create a smooth transition from one image to the other. In the actual file there are over 20 frames.

»

» Playback

Playing back 24-bit images is fraught with problems. For starters, unless you are happy with the pseudo 18-bit colours of AGA HAM8 mode, a separate 24-bit board will be required. Unless your animation is very short or you have an enormous number of SIMMs, it is unlikely it can be stored and played back directly from RAM.

You may be lucky enough to have a display board which can playback sufficiently quickly from hard disk (another good reason to invest in super-fast SCSI-2 equipment), but in most circumstances a frame-by-frame approach is called for.

Recording frames individually in this way is a time consuming business, but worse still a video deck will cost several thousand pounds.

PROBLEMS

Most Amiga rendering packages will produce 24-bit images, which means theoretically at least, every Amiga is capable of producing professional quality results. The first problem is the time required to produce the film. With full raytracing, each picture can take hours or days to produce – and don't think a 68040 will change that figure. The speed-ups from expensive silicon implants soon get absorbed as you add just one more lightsource, or bumpmap or motion blur effect. An animation which lasts 30 seconds will need 750 frames, and if you want the finished film in say, two days, this means each frame must be rendered in just under four minutes. At this time, no Amiga software running on any Amiga can produce suitable images in this time.

The solution is to use multiple Amigas, networked to a central storage device. Even two Amiga 2000s fitted with 40MHz '040 cards can speed this operation up so that you should see something around lunchtime on the third day.

The second problem is storage space – a 24-bit frame consumes a lot of memory, so hard disks with sizes in the Gigabytes are required. Optical and floptical devices are mandatory for back-ups.

CONSIDERATIONS OF SPEED

The speed factor is very important in animation. In order to provide a realistic animation which can fool the human brain, frames must be presented at a speed of around 20 per second. Animators have chosen a standard of 25 fps for video work, which nicely matches this format's speed.

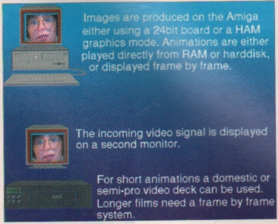
When it comes to your Amiga playing back your Animation, you could be in trouble though. It is all very well for you to select 25 fps from the *DPaint* control panel, but it is another thing entirely for *DPaint* to deliver at this speed. With a 68000 based machine, animating a sequence of lo-res shots in 16 colours direct from memory, you have a decent chance, but if you switch to hi-res you can just about forget it.

There are many dedicated playback programs around, most of the good ones are in the public domain, too. *DPaint* conforms to a standard known as Anim5, a development from the earlier delta-shift differencing systems. These Anim formats save space by using a differencing technique on successive frames in an animation. Instead of storing complete images, only the parts that have changed from one frame to the next are stored. This results in a much smaller file, and in some instances, a much quicker animation, too.

Although the processor must spend time decoding the Anim information, it doesn't have to redraw the entire frame. Also, due to the much smaller file size, each frame can be accessed much faster. This makes it more feasible to run animations from disk instead of RAM – a limiting factor which has previously been insurmountable.

With later Amiga models, with

»

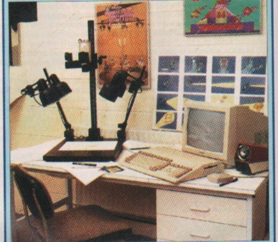


Images are produced on the Amiga either using a 24bit board or a HAM graphics mode. Animations are either played directly from RAM or harddisk, or displayed frame by frame.

The incoming video signal is displayed on a second monitor.

For short animations a domestic or semi-pro video deck can be used. Longer films need a frame by frame system.

AMIGA PROFILES



CHROMACOLOUR

PROFILES

Chromacolour is a London-based business which deals primarily with supplying animation studios with consumables – animation cells, paints, pencils, brushes, etc. It has a vast client base covering most of the globe, from North America to the Orient.

A few years ago they produced a ground breaking device which caused considerable interest in the animation arena. It is essentially a simple device – a digitiser and camera mounted over an animation pegboard, connected to an Amiga. Line animations are placed on the board in sequence and then the software digitises each one in turn. The frames are stored in the Amiga so that the sequence can be played back at any speed, or edited – adding and removing frames in the stored sequence until the output is the way you like it.

There doesn't seem to be anything revolutionary about this until you consider the alternatives. At present, most studios shoot directly onto video – editing facilities are more complicated, more expensive and take much longer to produce the same result.

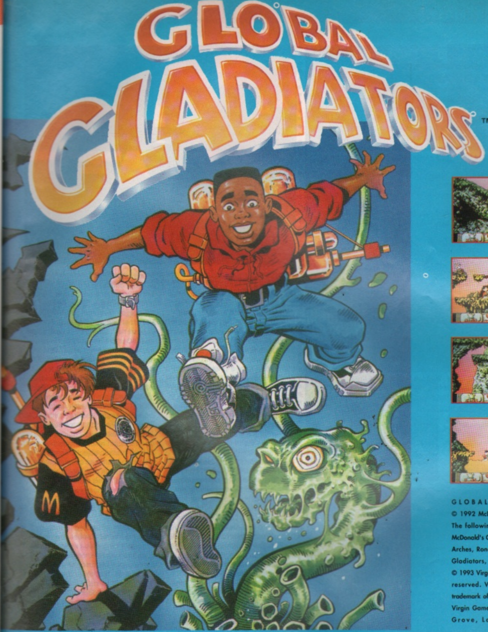
Because the equipment is so expensive (at least twice the price of the Chromacolour set-up), many animation houses can only afford one or two of these units. The result is a log-jam of animators all queuing up to use the equipment, only to find after a lengthy shooting session that a couple of frames were out of sequence, or one was shot twice by accident, and it could be hours or even days before they get a chance to use the equipment again.

There are several versions of Chromacolour's Line Test software available now, which allow the addition of sound, and multiple animation layers, which can be mixed in much the same way as soundtracks are mixed with *Med*. For huge animations, large amounts of RAM are required

Having shipped around a hundred units worldwide, the Chromacolour could be considered fairly successful. Clients include Disney (who have three), Rolf Harris (obviously), and King Rollo films, who created the all-time animated great, Mr. Benn.

Future developments will include a very similar but scaled down system designed for beginners and schools. This would operate around some software being developed specifically for the purpose in conjunction with Hanna-Barbera and Entertainment International. We've taken a peek at what's coming up and it looks very interesting indeed. Look out for a review in CU soon.

Chromacolour can be contacted on 081 675 8422.



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Virgin
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AMIGA PROFILES

PROFILES

WAGMAN

One keen supporter of the Amiga as a complete solution for animators is Jane Wagman, an MA student on the Images and Communication course at Goldsmith's College. Having started out in the more physical arts as a sculptress, she moved into computer generated images and animation first at Camberwell and now at Goldsmith's where she has just completed her MA project, a five minute animation called 'The Seamstress'.

This project was put together almost completely on an A4000, using a variety of Amiga software and hardware. Video sequences were shot using a camcorder and then digitised using the Vidi digitiser from Rombo. Using this hardware it was possible to grab several frames a second from the real time playback.

The images were grabbed in a mono lo-res format, giving an image resolution which appears only slightly pixellated when recorded down onto standard VHS tape.

The images were then hand coloured by loading each frame individually into *DPaint* and expanding the palette, before being saved back onto hard disk. The sequence is punctuated by many spot effects such as morphs and ripples, which were all performed using either *DPaint* or GVP's *Image FX* software.

The resultant animation was then recorded by playing the entire sequence directly from the A4000's hard drive and recording it onto video.

Why an Amiga? Well, the power/price ration makes it ideal for people with minimal resources, such as students the world over. There is nothing second rate about the output either.

The actual process of digitising all the frames and colouring them took a little over three months – a reasonably short amount of time considering that a conventional line artist can only produce about a minute of top quality animation a year.

Jane is optimistic about the future. With the current move towards CD technology there will be more demand for computer-fluent animators, working with digitised graphic sequences for the multimedia products of the future.

» their 32-bit addressing and faster CPUs, direct from disk animation does become viable, even for higher resolution images. Recent developments include the Anim7 format which can replay an animation direct from disk on an A4000/030 faster than an A500/A600 can show a sequence direct from RAM.

The other worrying factor is that many programs simply aim at a speed – sometimes the gap between frames can vary. This may be acceptable if you are sitting watching it at home, but it is not good enough for recording. Better software is in development, but for the moment the only solution is to severely over-power your machine for the task you want it to achieve.

LAYING DOWN VIDEO

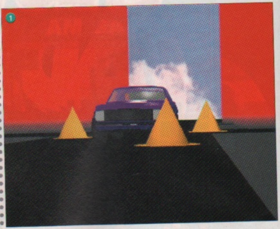
The other solution to the recording problem is not to record an animation playing from your Amiga, but a sequence of still frames. Any Amiga can display a single image, so you don't even need a very expensive computer. Unfortunately you will need a very expensive video deck. Even if you go for a fairly bog-standard deck you are looking at a few thousand quid for a machine with frame accurate recording.

There are cheaper solutions. Many of the top-end consumer decks available today, in the £400-700 price range, are capable of recording to a couple of frames of accuracy – good enough for doing roughs and demos before booking studio time for the final cut.

This also means that you can produce much better animations in terms of image resolution. Never mind hi-res interlace, what about 24-bit? Well, you can certainly manage a HAM8 animation, but 24-bit is slightly more tricky. Depending on your 24-bit card, you are more than likely to need a transcoder as well. Most boards just give an RGB output for use with a monitor, but you'll be hard pressed to find a deck that accepts RGB as standard.

A typical quality encoder/transcoder will stretch your budget by another £150 or so, if you are easily satisfied. Obviously, the more expensive the deck you are using, the more important it is to chose your transcoder with care.

If you are lucky, your 24-bit card will come packed to the Zorro busses with ultra fast RAM. This can be used for buffering animation frames – essential to building up images in an animation so that the frames are complete when displayed. Technology in 24-bit cards has come a long way and many are now capable of a fairly respectable frame speed, but not 25 fps.



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RayTracing

The beauty of raytracing (and other image rendering methods) is that the pictures which are produced look real. Depending on how much effort is spent designing the objects and their various textures and maps, the finished pictures can look so real it would be impossible to tell them apart from a photograph. Of course, the next logical step from stills is animation and the possibilities which result from being able to make films about objects and scenes which don't actually exist are endless.

Perhaps the simplest scenes to render are those featuring spaceships and planets. The simple lighting (one star and some ambient back-fill light), lack of casting shadows (the ships don't cast shadows on the planets) and relatively simple objects (planets are spherical) mean that rendering a photorealistic interplanetary shoot 'em up is one of the first areas where Amigas have already been used in real life.

Rendering packages work a lot like imaginary film studios. Cameras and lights can be positioned exactly where you want them, and the objects – your actors – can be given pre-defined paths to follow. Objects can also be animated, so a helicopter's rotor blades spin, a car's wheels rotate and the key on a clockwork robot winds down.

After checking the movement with a wireframe preview, it's only a matter of waiting for the finished full-colour animation to be rendered. For an animation, it is useful not to use full raytracing, as the extra time needed to create shadows is usually wasted. A good scanline algorithm will produce images of more than satisfactory quality.

If you want to see what can be achieved with consumer level equipment, check out the 'Star Wars Video Collection', which features work of maestro Tobias Richter (Call BVG on 0874 611633 for details).

The problem with creating more down to earth animations is the creation of realistic objects. This is an artform in itself, and several people and companies are making names for themselves in this relatively new field.

Several of these 'virtual prop builders' frequent Bulletin Boards such as CIX, so dust off your modem.The program *Real 3D v2* can take things a step further, by allowing interaction between images. Using a so-called particle animation system, objects can move under the force of gravity, collide with each other and bounce down flights of stairs.

For those producing 24-bit raytraced animations on a budget, the latest Retina 24-bit display card comes with software which can replay images at a very satisfactory rate.

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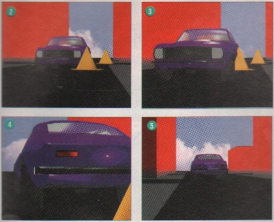


Raytraced images can be used to model or simulate real events. A possible use is the recreation of road accidents – here witness 'A' sees a blue car rush towards him, run over his feet and speed into the distance.

Digital Editing

This is a new field which is set to explode within the year. Currently editing video is a time-consuming and expensive business, requiring dedicated hardware and a lot of time to get it right. A system which uses digital images, and therefore allows real time splicing, re-arranging and previewing would find a space on the desk of many a studio.

Further, as the images are all in the digital domain, generation loss is a thing of the past as the images can be reproduced with 100% accuracy every time, before final mastering to video tape. Soon even this stage will be removed as we all watch films directly from CD-ROM using MPEG technology.

Impulse, the makers of the rendering program *Imagine*, are working on such a device and have called it 'The Dream Machine'. They are aiming for a launch this year, and hope to provide units which will allow editing of everything from 30 second commercials to three hour feature films.

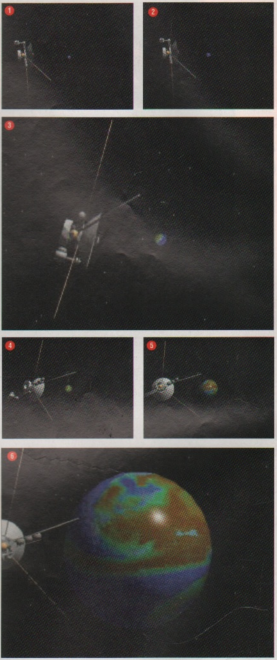
We won't have to wait that long to see Digital Editing in action though. At this moment a piece of software from the American multimedia company, Pantaray, is already in the final stages of testing. Called *Bay*, it is a further development from a previous package designed for use with the CDXL format on the CDTV.

The Future For Animation

The future of animation, and maybe the future of video, lies in the realm of the computer. Although traditional animators may whinge and complain abut the 'loss of quality' in computer animation (which is only true when considering film, not video) there is really no other way for a modern animation house to operate. Having one hundred animators all working overtime for a year to churn out a feature is simply not the future.

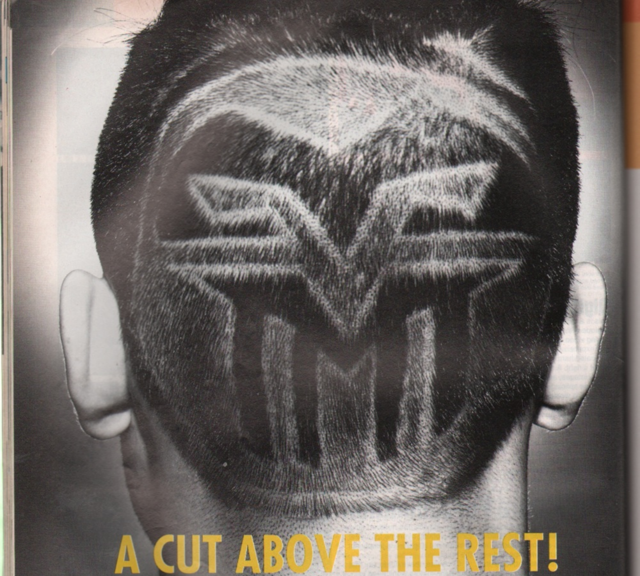
Of course, that's not to say that future anaimators won't need to have a good grounding in traditional animation techniques before moving on to computer-based development.

Below and Left: Using a 'real' digitised image in a raytracing program can result in some pretty strange effects. Here an image has been wrapped around a sphere, which subsequently explodes for no readily apparent reason.



A sequence of images from an animated homage to James F. Blinn – one of the founding fathers of computer graphics. Everyone has seen his famous 'voyager fly-by' films, created for NASA before their probe had even left the ground. This 24-bit animation was created for the Retina 24-bit card with *Imagine* and plays back its 400 frames from memory in real-time on an A4000/030.

THANKS
Special thanks this time to John Kennedy, Jane Wagman, Tim Green, Roy Evans of Chromacolour and Gina Jones.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BUYERS GUIDE

Fancy getting your hands on a decent animation package? Fortunately, you don't need the financial backing of the Disney Studio or the genius of Industrial Light and Magic to create spectacular animated effects. Peter Lee offers a rough guide to what's out there for the animator.

Even special FX junkie, Steven Spielberg, had to start somewhere – and he didn't have the advantage of the best home graphics computer. You do, and there's plenty of software out there to help you to bring your dreams to life – in full, glorious and frighteningly realistic colour and movement.

We've picked a sample of widely available, moderately priced and easy-to-learn animation packages to suit the animation newcomer as well as the more street-wise animator who is maybe stuck in a rut with a fave program, and who may want to grow by trying new techniques. Here's Peter's personal whistle-stop guide to the software.

Animation Packages

AEGIS ANIMATOR

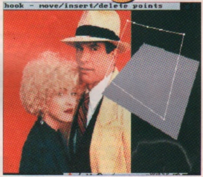
OXXI AEGIS • PRICE £99.95 • NO LONGER AVAILABLE NEW

Aegis Animator is just one of the few vector graphic animators available. Vectors have many good points – very smooth transitions, object movement and point editing – but the downside with *Animator* is the lack of a freehand drawing option. You can create lines, polygons, circles, stars and rectangles, with ease but curves take patience and are nearly always angular.

Nevertheless, you can effortlessly animate and morph the range of objects available. Squaring a circle is a two-minute job and real paths can be drawn along which objects can be animated.

Controlling the way items flow into different shapes is cleverly handled. Each object created (apart from bitmaps) is composed of points. Editing these is simply a matter of activating one and stretching or repositioning it. Once the rubber-banding has been done, you click on the icon which moves to the next frame, and the animation which results from your changes is handled automatically by the program. So, no matter how severe your changes on the shapes from one frame to another, they all flow smoothly as the sequence plays.

Bitmap graphic screens and brushes can be loaded in, but only in the program's low-resolution mode. You'd be surprised how successful a combination of vector and bitmap animation is, given some planning. A neat trick which works very well is to load in a bitmap picture, then use shapes to cover it up. Frame by frame you can edit the shapes to represent curtains opening, or a camera lens iris opening and shutting, revealing your image.



Metamorphic animation and bitmap loading allow for some clever effects in *Aegis Animator*. Bitmaps can be full screen or brushes. Once a vector object has been drawn it can be morphed, animated and edited. Colour attributes are also editable throughout a sequence.

Colour control is perfect, allowing colours to change between frames (something even *DPaint* can't match) for super fades or flashes. Take a simple glow effect, for example. In most other animation programs this is a dog to do. But in *Animator* you can have one colour build from background grey, through a whole range, until it flashes white. All this is done simply by editing the colour values of that single colour frame by frame. It's great for having invisible objects (carvings, text and the like) appear gradually from nowhere.

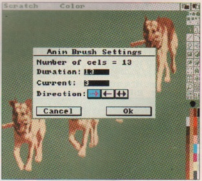
Animator also has a comprehensive, though not too intuitive, storyboard function for cutting and pasting between sequences. Poor memory use restricts the length of sequences featuring bitmaps, but it's a real animator's treat to use, and does things Electronics Arts have ignored throughout the life of *DPaint*.

DELUXE PAINT III & IV

ELECTRONIC ARTS • PRICE £89.99 (IV) • TEL: 0753 549442

No introductions are necessary for *Deluxe Paint* because it offers more power per pound than any other animation package. It hasn't got vectors or path animations (yet) but it can do just about everything else. *Version III* introduced animation and cut no corners by adding brush manipulation in three dimensions, as well. *Version IV* expanded on this rock-solid base by incorporating all paint and animation features in HAM mode, too.

Dedicated HAM animation packages have far better Special FX, but they can't compete against the thoroughness of *DPaint* for other jobs and they can never be the mode of choice for animations on a standard Amiga due to speed, image resolution and quality.



Anim Brush Settings

Number of cels = 13

Duration: 13

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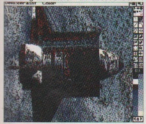
Cancel
Ok

***DPaint III* & *IV* feature Anim brushes – small portions of animation which can be used throughout a sequence. Anim brushes, plus stunning realistic images can be accessed via the Hold and Modify mode.**

Brush morphing was probably the one feature in *Version IV* which drew real admiration from longstanding animators. Talk about excitement – this feature alone makes it worth the upgrade from *III*.



Although it's by no means perfect – dedicated programs have since emerged which give professional morphing results – it is a major attraction on a piece of home software. Brush morphing has a size restriction, naturally enough, and it really only gives an elite performance on brushes of similar size and roughly similar colours. The chicken morphing into an egg is a trite example, but it shows what kind of magic *DPaint IV* can work. More usefully you can morph two different text brushes, or outline text, into a drawing. One fun effect is to have two digitised pictures morph into each other – Major and Thatcher, or your mum and dad, for instance.

Version IV also introduced the gee-whiz Light Table, allowing onion-skinning of animation frames, plus an animation control panel, which simplified the whole business of editing. There are still things wrong with *DPaint*, but who wants to niggle when you get so much? An animation standard not because it's used by almost everyone, but because it's good enough to be used by almost everyone.

»

» DELUXE VIDEO III

ELECTRONIC ARTS • PRICE £99.99 • TEL: 0753 549442

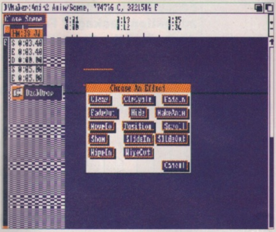
This well-established piece of software has found a home as both a video effects generator and a general animation controller. This is not a paint package, it's simply an animation engine. Originally the sister to *DeluxePaint*, it features a marvellous control model for when you are working on tracks; you can pin flags to signal events along a line representing the duration of a track.

So, for instance, if you want a sound to begin 25 seconds into a sequence, you simply flag the event at the 25 second mark and select the play sound event for the flag. Similarly, Anim brushes or ordinary brushes can be made to appear and move on cue in a variety of transitions.

DVideo's visual scripting language is very easy to learn,despite the plethora of options. As you become more proficient you can toggle an advanced user mode, which gives you even more control and power.

Take a simple thing like loading a picture. There are no fewer than 24 options to choose from, ranging from having it scroll in or wipe out, right through to fade in or colour cycle. Once you've chosen an option, you can tweak even more subtle events – direction of scroll and coarseness of checkerboard effect, for example. The wipe effect has 21 features, which enable you to fine tune your sequence to an almost infinite level.

Because *DPaint IV* has such comprehensive animation features, and built-in graphic creativity, it's hard to justify *DVideo III* simply as an animation shifter. If, on the other hand, you intend including special effects or sound tracks on images, then it's still well worth a look.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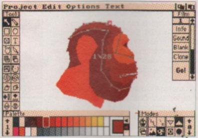
BackDrop
Choose An Effect
Clear
ClrCycle
FadeIn
FadeOut
Hide
MakeAnim
MoveTo
Position
Scroll
Show
SlideIn
SlideOut
WipeIn
WipeOut
Cancel

This animation engine offers complete control over your Amiga movies – which is just as well considering you'll need an art package to load in anything worthwhile. Animations are created by planting flags on tracks, which represent events at specific times.

FANTAVISION

BRODERBUND • PRICE £59.95 • NO LONGER AVAILABLE NEW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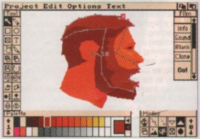
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Modes

Bitmaps and vectors combine beautifully in this fun metamorphic animation package. As well as working in several Amiga modes, the program allows sounds to be played back in predetermined frames.

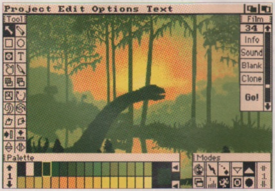
You don't really miss sounds until you use a program which supports them. If you enjoy animating for the sake of it, then they can add another real dimension to your output. And anyone with a sound digitiser will be able to get the most out of their hobby by adding effects and sound bites to their animations. Imagine – your cartoon of Homer Simpson being able to look you in the eye and shout 'Doh!'. Talk about scary...

As far as vector editing is concerned, things couldn't be simpler with each object having a variable number of points, any of which can be stretched or deleted over a sequence. Objects can meld into others very smoothly and bitmap brushes can be incorporated with little fuss. Background bitmaps can be loaded after the animation has been completed. *Fantavision* has a very comprehensive suite of editing and drawing tools, and can rotate vectors in three dimensions.

Although *Aegis Animator* got there first, *Fantavision*, I have to admit, did it better, especially with PAL (full screen) support. Control of the program is initially a struggle, but then things become intuitive. After a few hours you will be able to create super-smooth animations thanks to the software doing all the really hard work on the tweens.

Constructing an object – take the example face above – is just a matter of defining different coloured polygons. If you make a mistake, you can edit the point out, or reposition it. It strikes me as being a lot like painting by numbers, with small solids making up the whole. Items can be moved independently or as a group and you can wire-frame your objects for easier control whilst editing. Moving bitmap brushes is just like moving any other object, you can combine vectors and bitmaps for special effects.

The only real let-down is lack of storyboarding facilities. Otherwise it's a joy to use and has super-slick potential. It has a great fun-to-use factor, too.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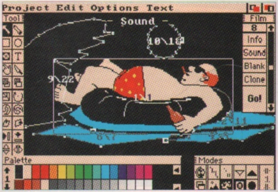
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Clone
Go!
Palette
Modes

VISTA PRO

MERIDIAN DISTRIBUTION • PRICE £99.95 • TEL: 081 543 3500

I've included this specialist package because of the fun it offers in creating strange new worlds and animating them. OK, it may be a one-note piece of software which does all the drawing (or rendering) itself but you control everything about the landscapes that Vista *Pro* generates, right down to the sea level and snow-line. The program takes the data you've input, and turns it into a realistic landscape scene, either as a single screen view or as an animation.

Most interesting landscapes are, naturally enough, from the United States, which is quite appropriate if you feel like flooding the Mississippi/Missouri basin. Data for the topography has been taken from satellite radar, with a resolution of around 30 metres. This may not be the real world, but it comes close.

There's a great deal of pleasure to be had in *Vista Pro* but, on balance, you have to agree it's a pretty sterile experience. You do your God bit – add a dash of snow above 1,200 feet, flood the valley, splatter a few trees around and tell the program it's Fall (that's Autumn to you and me), and that's it basically. Leave it to draw its polygons and when you've come back there's a wonderful, near photo-realistic image on screen. Slarty Bartfarst from the *Hitch-Hiker's Guide* (the coastline designer, you might recall) would love this! I know I do, but I've yet to use it for anything else other than creating great backgrounds for *Deluxe Paint* Anim brushes.

It's pretty demanding on your system as it needs megabytes of RAM and takes ages to actually draw an animation. It also eats into your hard drive capacity like a gannet.

But, *if* you've got loads of memory, and *if* you have the storage capacity and *if* you don't mind leaving your Amiga cooking all night, then seeing your camera's flight-path over the mountains of Mars, or some green and pleasant land, is all worth it. The big grumble is that these animations are saved in a non-standard form. So really it's art for art's sake, which is not a bad thing at this level of quality.

Play God – create new worlds with this clever piece of software which generates landscapes from your data. It's included here because of its animation features, which don't quite take seven days to create...

MOVIE MAGIC

In 1906 J Stuart Blackton was the first to use stop-motion on film to produce the first movie cartoon. The cartoon was called Humorous Phases of Funny Faces.

In 1909, the first US cartoon went on theatrical release; it was called Gertie the Dinosaur and was made by Winsor McCay, a newspaper cartoonist.

From the late 20s, cartoons were dominated by Walt Disney, whose output grew from Silly Symphonies to fully-fledged feature-length cartoon movies (Snow White, Pinocchio, Bambi, Fantasia). In 1941 some of Walt's animators went on strike, lost their jobs, and founded UPA, which was responsible for cartoon series such as Mr Magoo and Gerald McBoing Boing.

Apart from Disney (1901-1966), others have left an indelible mark in the world of cinema animation. Here are a few greats:

Max and Dave Fleischer – these brothers were the chief rivals to Disney in the 30s. Vienna-born Max and Dave (born in New York) teamed up in 1920 to create such classics as Betty Boop and Popeye the Sailor. After a stab at a longer piece – 'Popeye meets Sinbad the Sailor' in 1936 – they tried their hands at a full length movie. Made in 1939, it was called Gulliver's Travels, and featured rotoscoping (tracing from live action) of the giant hero. However, their last film, Mr Bug Goes to Town, made in 1941 flopped and the team split.

Tex Avery – Texas-born Fred Avery was one of the creators of Bugs Bunny. His work featured violence strongly and was much more unpredictable than his contemporaries. Among his creations were Chilly Willy (honest, it's a penguin!), Droopy the Dog and Lucky Ducky.

Fritz Freleng – Creator of the Pink Panther dude. Fritz was born in Kansas in 1900 and spent a little time at Disney before moving to Warner Bros. where, for 30 years, he helped form the careers of such cartoon stars as Bugs Bunny, Speedy Gonzales, 'I thawd I saw a pussy cat, I did, I did' Tweety Pie and Thilvethter (sorry, Sylvester).

Ralph Bakshi – who? OK, not a household name, but some of his works are. He directed the marvellous rotoscoped epic, Lord of the Rings (1978), as well as Fritz the Cat. Those of us who saw it in 1972 felt a bit wicked, as it was X-rated (18 in today's terms)!

»

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DISNEY ANIMATION STUDIO

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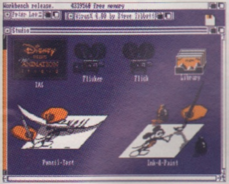
This is a major quality release which addresses animation in the traditional way. This has its good and bad points. The Disney approach has been to partition animation creation into distinct areas, whereas most other programs allow full random access to any feature. The building blocks of the animation process are pencil-test, exposure sheet, ink, paint and camera.

Disciplined users hankering for old values and skills will be at home as they pencil-test their work before colouring it in. I find this tedious and over-demanding in terms of preplanning and stilting for the quick response to ideas which generally make a work session flow more fluidly. However cumbersome I find the program, I have to admit it's a comprehensive piece of work and features the kind of Disney demos to drool over.



The program certainly works well as an education tool. Confined as you are to the traditionalist methods of animation, you can learn a lot about cartoon structure. The manual preaches the animation gospel according to Walt, which obviously worked judging by the glorious films of yesteryear. But apart from the cartoons, there's little you can do with *DAS*. If you're not a good freehand artist, you're going to find no help here. There are no built-in transitions or animation routines. It just plays back what you've drawn but, having said that, there's not a program which does this better.

The onion skinning facilities are unsurpassed and are vital for creating flowing and exaggerated movement – something which has been added to *DPaint IV* via the Light Table.

On the plus side, *DAS*'s modular approach is ideal for low-memory systems, loading in features only when needed. Sound is also well implemented.

I'm not pro or anti this one – it's great to be able to animate using age-old methods. But time can be a killer, and if you need things yesterday, better shelve this one for when you have more free time and an urge to call on real craftsmanship.

One for purists, *Disney Animation Studio* offers a multi-layered approach to animation; the program's segments can be selected from Workbench if memory is tight, or from within the main *DAS* program. A great feature is the Onion Skinning effect which enables sequential frames to be viewed together through ghosting of images.

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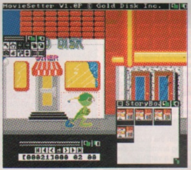
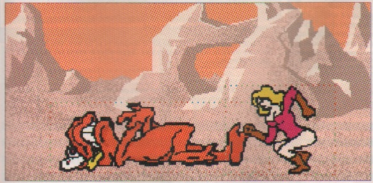


Every CU AMIGA reader should have this clever little program – we gave it away on our coverdisk last September. If you were unlucky enough not to get the mag, then you're missing out on a lively, fun animation package.

Control is more complex than it should be, but hopefully you caught the tutorials we gave. In any event, all this complexity hides a very linear approach to animation. If you like the constraints offered by more traditional animation methods then you'll love it. Free-wheeling suck-it-and-see animators may feel inhibited though.

Animation production is based on tracks, which have events in them – sound, colour cycling, scrolling and so on. It's very much an editing suite for animations, building up sequences item by item in a really powerful way. Although there are drawing tools contained within *Movie Setter*, there is a very useful option to load in images which have been *DPaint*-ed. While not being able to fault the facilities offered in the program for cartoon-style storyboards – a much wider range than any other package – it has to be said that if you need a special effect in a hurry this isn't the best way to do it. One for Tex Avery/Dan Bluth aspirants rather than quick thrill seekers.



Given away on one of our coverdisks, this cartoon-style animation program is packed with facilities, but takes a lot of mastering. Sound effects and animated brushes are all part of the package; and there's even animated clipart available.

JARGON BUSTERS

- **BITMAP GRAPHICS** – The attribute of each pixel – its colour on screen – is mapped into memory. If you are using the Amiga's half brite (64 colour) or HAM modes, each pixel's information is contained in six bit-planes. A bit-plane can be imagined as a layer of memory containing information that the computer needs to work out the colour and brightness of any one pixel. That's a whole lot of memory.
- **HAM MODE** – A special graphics mode on the Amiga which allows 4096 colours on screen through clever use of display control. The trade-off is slower animations and painting due to larger amounts of data being shifted, and the dreaded 'fringing' effect, where adjacent colours can streak into each other. However, it really is worth the downside for the glorious real-life images you can animate in HAM.
- **MORPH** – Buzz word describing the change in shape from one object to another. Pop videos and TV ads use the technique extensively – from cars morphing into animals to hair style changes. Take for example those adverts which have different faces constantly morphing into one another.
- **ONION SKINNING** – The buzz-word for being able to display the current animation frame superimposed on earlier or later frames, which are ghosted out in muted colours. Onion skinning allows you to see exactly what has changed from frame to frame. Therefore, it is vital for any hand-drawn movement rather than computer-generated movement.
- **STORYBOARD** – Either a draft on paper of how you intend your animation to progress, or a scene-by-scene display by the animation software, allowing entry to the animation at any point, cutting and pasting of sequences and multi-frame edits.
- **TWEEN** – In animation, an in-between state. In morphing, for example, you have a start image and an end image. The computer works out the in-between frames, which are called tweens.
- **VECTOR GRAPHICS** – Screen images based on lines and points which are effectively on-screen co-ordinates, not pixels. Information on items drawn on screen are stored as co-ordinate in memory, and not as blocks of image data as in bitmap graphics. Drawn items can be treated as objects independent of their position on screen, and so can be moved, cloned or edited. Vector animation takes care of the smooth transition from one shape to another. The user just defines a start and end shape, and on playback the software melds the shapes as he/she wishes.

»

» PHOTON VIDEO AND PHOTON PAINT

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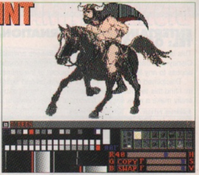
As in the case of *DPaint*, *Photon Video*'s animation functions evolved to support a standard art package. In the case of *Photon Paint*, HAM had always been a selling point and the writers managed to seamlessly integrate both drawing and animation features.

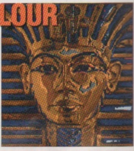
Together, the programs are a HAM dream. *Photon Video* is also very effective in all the other Amiga resolutions. This is useful for roughing out your animations first in less-demanding resolutions. Control and effects are many, and superbly implemented. For instance, you can load digitised animations into *Paint* and add some wonderful HAM effects before completing the animation edit in *Video*.

Sound is a major attraction with the *Video* software, as are comprehensive editing functions, which effectively cover all aspects of animation production. Sound tracks can be edited independently of the motion, and *Paint*'s excellent drawing tools and brush mapping form the bedrock of a feature-packed suite which has always been dogged by *DPaint*'s saturation coverage, but which deserves better.



Two programs which offer a great deal of commitment to HAM mode. Special effects are well handled, which is the major reason for using this mode anyway.

SPECTRACOLOUR



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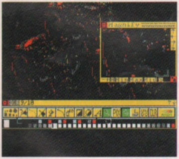
In the old days when HAM painting on the Amiga was barely in its infancy, *Spectracolour* helped to open up the potential for 4096 colour painting. However, it *only* works in HAM, which means you will still need a standard-mode animation package for the lower-level jobs.

Painting options have plenty of special effects, as you'd expect with all those colours, and these can be used to great effect in the animation side of the program. Brushes can be animated throughout a sequence and paths can be declared simply by placing the brush at the start and end positions of a desired sequence or path, or more usefully by allowing a freehand path to be constructed and edited. Control of animations is nicely done through a video-style control panel, but you may find playback sluggish due to the amount of data being used in HAM mode.

Spectracolour has been eclipsed by *DPaint IV*, but it can still offer a dedicated solution to HAM animation. If you need to convert any low-resolution animations into HAM for effects work, the program will happily (and slowly!) convert them.

Anim brushes can be loaded and animated too and with the brush remap option they can have their colours matched to the existing animation palette. This is a very useful way of pulling together items from different sources – a professional Anim brush sequence into a colour digitised background, for instance – which need to be incorporated into a single animation.

Good points – HAM special FX and brush movement control; bad points – speed and lack of other drawing modes.



Once again, it's the HAM options which make this a joy to use. Animation control is straightforward and powerful.

ANIMATION TIPS

Do you ever get fed up watching repeat after repeat of cartoons like Scooby Do? Do you wish that Shaggy and the gang would just for once not solve the hideous crime by discovering that the criminal was really that nasty Mr Bluggen disguised as the lovely little old Mrs Crumble? Do you wish you could put some more magic into cartoons and create your own self-styled Taz-Manian Devil? I know that no-one could ever possibly top the Batman cartoons but that's my own personal view.

Well, it's one thing getting yourself all fired up when watching the latest Tom & Jerry cartoon, but it's a different kettle of animated characters to actually go out there and create a sequel to it.

CU AMIGA brings you the chance to fulfil your dreams and create your own cartoons with this tip top list of anim tricks.

So, for those of you with ideas to realise here's Pete's top ten tips to better animation.

① Keep things simple. It's all very well spending six hours drawing every individual scale on your dinosaur, but when it stomps across the screen at 15 frames a second, who's going to notice?

② Don't waste movement. Simple animations on a larger image are more effective than gross movements. A tiny twinkling starburst can be more pleasing than a major dazzle.

③ Avoid clutter. Having too many things whirling around the screen at once not only slows down the speed of your animation, it confuses the viewer.

④ Choose the lowest resolution mode you can bear. Remember, the higher the resolution, the more data the Amiga has to shunt around, which, in turn, means the slower your playback becomes.

⑤ Define the object. If you intend moving a brush or object over a busy background, give it an outer edge of black to add to its definition.

⑥ If you're using text, either as a static or as an animated object, choose a medium-sized font (24pt) otherwise it could well get lost. Sans-serif typestyles (ones without fancy bits sticking out) are much easier to animate.

⑦ If you're not too confident about drawing, don't worry. There's lots of artwork out there ready and waiting, from public domain drawings and digitised images to professional Anim brushes. These images are there to use; don't be ashamed – enjoy!

⑧ Take the trouble to learn the software. It may sound facile, but most people don't read the manual until they hit a problem. There may be several ways to achieve an effect, but only one will give the best results. Know about it.

⑨ Save your work regularly! Animations take up a lot of time, and programs *have* been known to lock up. This one's from the heart!

⑩ Finish the job properly. Don't just let the computer do all the work. After an animation there will always be extras to tweak by hand. Jagged edges to smooth out, shadows to add, for example.

CHOICES, CHOICES...

OK, so now you've taken a look at what's out there and you've got a rough idea of the good and the bad of each of the packages. The burning question now is how do they rate? Here's an at-a-glance guide to the world of animation.

	EASE OF USE	FEATURES	FLEXIBILITY	OVERALL
AEGIS ANIMATOR	64%	55%	52%	63%
DPAINT III & IV	84%	88%	92%	92%
DELUXE VIDEO III	62%	66%	45%	52%
DISNEY ANIMATION STUDIO	32%	65%	57%	51%
FANTAVISION	56%	77%	74%	71%
MOVIESETTER	45%	72%	56%	61%
PHOTON VIDEO &PHOTON PAINT	61%	88%	71%	72%
SPECTRACOLOUR	50%	51%	66%	55%
VISTA PRO	59%	62%	40%	56%

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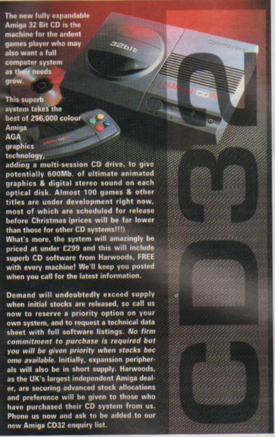

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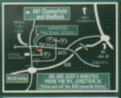
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SCREEN SCENE

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CU AMIGA SUPER STAR

We've searched the Amiga scene for the hottest news on upcoming games. Here's some sneak previews of the best.

FIRST

OVERDRIVE

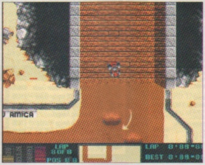
TEAM 17

RACING
TEAM 17
PRESS FIRE TO START

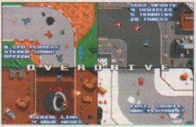
THE GAMEPLAY: A racing bonanza in the style of everything from *Super Sprint* to *Super Cars*. Race one of four different vehicles (Grand Prix racer, buggy, off road 4x4 truck or sports car) around 20 different circuits covering five different types of terrain: Grand Prix, City, Ice, Mud and a 4x4 Arena. The whole thing is viewed from above, with a mini-map built into the instrument panel at the bottom of the screen so that you can see the bends ahead, along with all the bonus objects lining the tracks, such as turbo pads, which send you rocketing along at high speeds, and cash and prizes conveniently placed in inconvenient places.

WHAT'S NEW: Speed. You may well have seen this kind of game before, but you've never seen it run this fast. As with all Team 17 games, *Overdrive* clocks up a 50 MHz update on the scrolling, leaving you flying all over the shop. The familiar rotational control means that you won't get lost too quickly. The difficulty curves are being designed so that you can work through the game at your own pace – slowly for novices but in leaps and bounds for experts.

Strategically placed arrows guide you around the track, warning you of dangerous bends.



Here's an overview of some of the tracks that'll appear in the finished version of this corker.



BEHIND THE SCENES: *Overdrive* is being coded for Team 17 by Psionic Systems, authors of *Assassin*, with David Broadhurst handling coding, Haydn Dalton on graphics and Alistair Brimble in charge of sonics. The game's been in production now for around seven months, although there seems to be some disagreement over whose idea it actually was. David wanted to do a car racing game at the same time as Team 17's Martin Brown wanted to design one. The game was handed to a different team, who dropped out, leaving David happily perched at the keyboard.

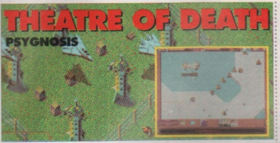
FIRST IMPRESSIONS: If you think you've seen everything there is to see when it comes to top-view racers, think again. At the moment, *Overdrive* is restricted to a single-track, eight-lap demo, but already it's highly addictive. There's even been some uproar over who can get the lowest lap time, and the challenges look set to continue long into the night. We'll have a full review next month.

F1

DOMARK

THE GAMEPLAY: Tear around all of the official Formula One tracks at the kind of speed that turns your hair grey, working through the gears and getting as much power out of your machine as is humanly possible. This product is a combination of a couple of titles already available in Europe – namely *Vroom Extra Courses* and *Vroom Multiplayer*. As you can probably guess, it's been coded by Lankhor, the team behind *Vroom*.

T IMPRESSIONS



THEATRE OF DEATH

PSYGNOSIS

THE GAMEPLAY: Cross *Syndicate* with *Cannon Fodder*, throw in a dash of *Laser Squad*, and you'll have some idea of what *Theatre of Death* is all about. Despite its unassuming exterior, this is no ordinary wargame – in fact, it's not so much a traditional wargame, more a thinking man's shoot 'em up. Each level has you in control of a small platoon, with the sole aim of killing all the enemy. Once you've done that, it's off to the next level.

WHAT'S NEW: Diversity is the name of the game. One minute you're in the Sahara desert, fighting off Rommel's finest, and the next you're on the moon with a patrol of spacemen. Instead of being tied to a logical scenario, the game roams around time and space in oder to keep each new level fresh.

BEHIND THE SCENES: It's the first game by Dave Anthony who's actually coded and designed it all.

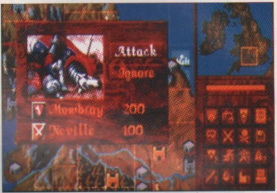
FIRST IMPRESSIONS: At a glance, you might think this is just another *Populous*, but it's far more accessible than all those high-brow God simulators. Death is approached with a potentially offensive sense of humour, with lots of blood and mutilation. It'll have a tough time up against *Cannon Fodder*, but should win votes from the more strategically-minded violence freaks.

* * *

WHAT'S NEW: *Vroom* has already become a hit thanks to its incredible speeds. *F1*, as well as being officially endorsed and tweaked to fit the licence, features a multiplayer mode, where you can go head to head on a split screen with no loss of speed, along with a special learning curve, that allows you to tailor your car's maximum speed to make the game easier to play for novices.

BEHIND THE SCENES: The console versions are the first to appear, so naturally Lankhor have been beavering away on those for the last six months. Don't worry, though, the Amiga version isn't far behind. With *Vroom* finished some time ago, and *Vroom Multiplayer* already released in France, there isn't really much work left.

FIRST IMPRESSIONS: Wow! This is sooooo faaaaaast! It's not a true simulation, but it's as close as it needs to be without dampening the action. Domark are more or less guaranteed a cool game, thanks to the success of *Vroom*, but whether it's going to beat all the competition remains to be seen. Whatever happens, I'm sure we're going to have a lot of fun finding out!



Top: Here you're given the choice whether or not to engage in battle.

KINGMAKER

US GOLD

THE GAMEPLAY: Based on the successful board game of the same name, *Kingmaker* is the first such conversion US Gold have attempted in some time. Set in the period of history known as the War of the Roses your objective is to control the last surviving Royal and make him King of England. You get to head up a faction of nobles playing against up to five computer opponents. The board game uses cards to determine movement and battles etc. but on this version that's all handled by the CPU letting you concentrate on the best strategy you have to get the King. It's all icon and mouse controlled with a main window covering the map of England that zooms into close up when strategic planning is needed.

WHAT'S NEW: To be honest not a lot. There have been many strategy board games that have received the conversion treatment, including *Risk* and *Space Crusade*. However, the programmers have had the sense not to just copy the game but to discuss with the original board game designer how it could be enhanced. The result is that some of the events that are normally decided by the random turn of a card can now be influenced directly by yourself. For instance, on the board game, battles are decided by the relative sizes of the opposing forces and by the rating on a random card. Now, you can elect to fight the battle in real time – you may still lose but you may be able to seriously weaken the opponent in doing so.

BEHIND THE SCENES: *Kingmaker* has been in development for over 18 months and is being coded by Graham Lillee, who worked on *Heroes of the Lance* and *Shadow Sorcerer*. The graphics have been handled by Kev Bulmer, famous for his excellent work on *Corporation* and *Legends of Valour*. They claim that the Artificial Intelligence has been designed to recreate human thought processes to enable it to react quickly to an ever-changing tactical and strategic situation. The 32-bit colour available on the A1200 will greatly enhance the cinematic sequences that accompany the events like plagues and storms at sea.

FIRST IMPRESSIONS: Normally board games leave me cold, but I remember playing a good game of this about 10 years ago. Maybe that's why I think that it has great potential. The cinematic scenes are very reminiscent of *Legends* and the battle sequences are great fun. The main thing that will ensure its success, though, is how quickly the computer reacts to your plans – and that remains to be seen. It's due for release in late September so we'll bring you a review next issue.

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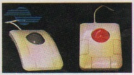

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ST REVIEW 91%

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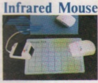

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Mr. Spock
WIP

STAR TREK
25TH ANNIVERSARY

Kirk, Spock and McCoy will soon be beaming onto your Amiga. Leaving aside jokes about the Captain's Log or his Klingons, Nick Veitch boldly goes to see how they're shaping up.

Just over 25 light years away in the lower corner of our galaxy, the residents of the Rigel system (assuming there are any) are just about to take their turn at being the luckiest people in the universe. For it has taken 25 Earth years for radio waves carrying the first episode of the greatest TV series ever made to reach there. The episode in question was an extended pilot show called 'The Cage', and the series it spawned became the most popular sci-fi series mankind has ever known – Star Trek.

In order to properly celebrate the silver jubilee, Interplay were given the license to produce a game based on the original series. Star Trek games have progressed a little since the grid-based combat efforts that first appeared on mainframes in the early seventies and, obviously, officially licensed ones can draw on a greater amount of copyrighted reference material – in fact they are compelled to.

TREK TRIVIA

The U.S.A.'s first space shuttle was originally called Explorer, until the Whitehouse received an unprecedented number of phone calls from irate Trekkies demanding that the name of America's first real spaceship should be the 'Enterprise'. The favour was returned in the first Trek film, where the Shuttle was displayed alongside all the other vessels named Enterprise throughout history.

BUT NOT AS WE KNOW IT

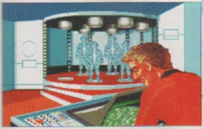
Characterisation is an important part of any Star Trek venture. As has been demonstrated on our screens, it was not the amazing special effects or the futuristic set which made the show such a success, but the interaction of the three main characters – Spock, Kirk and Bones. Spock was the cold, logical machine, incapable (except on rare occasions) of showing any emotion, Bones was his nemesis, always wallowing in the humanity of the situation, and Kirk was the decision maker, trying to balance up what both sides were telling him. In any game it is natural for the player to take the part of Kirk, but the game itself must provide the thoughts and advice of both Spock and Bones.

Not an easy task.

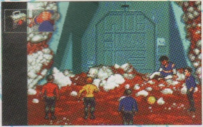
The designers, or really, the script writers, have taken on this task with glee though. Having watched and analysed as many episodes as possible, they set about their task. The result seems quite impressive. Spock is characteristically aloof and refuses to give anything away that he can't confirm to 20 decimal places and Bones roams about complaining about being transported and whingeing about the weather.

Even the physical characteristics of the various protagonists have been faithfully copied. On the bridge Kirk employs his favourite 'leaning

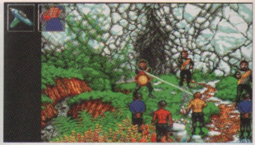
»



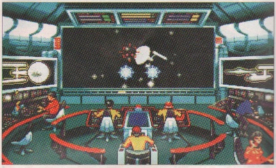
Four to beam down ... Chunnngggg. Yes, I know that doesn't look much like the transporter sound but have you got any better ideas?



Spock's tricorder isn't able to explain this door very easily. There'll be lots of mind-bending puzzles like this in the finished version.



All the old enemies are set to appear – Klingons will be there to take a bashing from cool-hand Kirk. Weren't they always?



The USS Republic takes a hit in the saucer during exercises. At the moment speed is a problem here but it's set to be sorted before the release.

» forward on one elbow' manoeuvre when in trouble, Uhura is often to be found massaging her earlobes and Spock goes for the 'Prince of Wales' hands-clasped behind the back tactic.

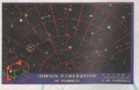
TAKING THE CON

Commanding the USS Enterprise won't be as easy as it was on TV – 20th Century science has not yet provided a workable voice interface for the Amiga, so you can't lean back in your chair and just give orders, but the next best thing is to use the pointer and select people to give your orders to. All the faithfuls will be present on the bridge – Scotty, Uhura, Checkov, Sulu and, of course, Mr. Spock. They all control their customary positions so if you want to fix anything, you'll have to ask Scotty, if you want to raise anyone on the radio (sorry, subspace frequencies) you'll ask Uhura and if you really want someone to raise their eyebrows and fob you of with some excuse like – 'There is insufficient data to make a prognosis at this time' then that funny Vulcan chap will be your man.

TREK TRIVIA

The Star Trek series got off to a controversial start by casting a woman in the role of First Officer. At that time it was considered way beyond the realms of fantasy that the female of the species would be capable of holding such a position of power. She was dropped after the pilot episode, relegating women on the Enterprise to the menial nurse, glorified telephonist and the occasional security member who gets shot.

The adventurous nature of the scripts continued though, with the series sporting a number of TV firsts, including the first inter-racial kiss.



The final frontier will be represented as a two dimensional navigation map. That's funny, I always thought that it had at least three dimensions.

The first piece of action that will take place is a combat exercise, with the Enterprise taking on the USS Republic in a fight to the simulated death. This is perhaps the most disappointing part of the game at the moment, as it is little more than a sort of *Elite* clone, but the main game will be based on an animated adventure theme.

To keep the game in line with the TV show the designers have decided to start each mission with a simulated title sequence, complete with an animated Enterprise cruising past planets and typical Trekkie titles appearing. The scene is set for another 50 minutes of strange new worlds.

The first mission in the game will centre around a landing party of four – Spock, Kirk, Bones and an expendable person in a red shirt. No sooner have they beamed down to Pollux-V to investigate trouble in a mining plant than they're up against mysterious energy sources, unknown metallic structures and having phaser battles with Klingons – but as ever, all is not as it seems.

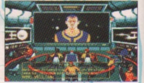
In line with other adventures, control will be via the mouse, but it's been promised to be easy to learn so that you'll be able to make use of any of the standard landing party-type gear – tricorder, phaser, communicator and the 'medical bee'. You won't need the reaction speed of a warp engine to play the game, but you will need to be as sharp as Spock's ears to spot all the clues.

TREK TRIVIA

In addition to the Next Generation, Deep Space Nine and the feature films, there have been quite a few Trek spin-offs. There are the models, the novels, the clothing, the CDs of the incidental music, the role-playing game and most interesting of all, the technical books, which will reveal everything from how to stabilise flux in the matter-antimatter chamber to how to ask a Klingon what the time is. Bizarrely, some colleges in America are now offering courses in Klingon!

SPACE PORT

The game itself is being ported directly from the original PC version, which is a good thing really, because the PC version was really rather good. The downside is that at the moment the game runs a little slow on the Amiga – some recoding to take advantage of the Amiga's custom chips will be necessary. The game is actually coming quite late to the Amiga – even the GameBoy has had a *Star Trek – 25th Anniversary* title.



Missions will start with a beam down to the planet's surface. Here it's the first one, set on Demon's World.

At the moment no sound is available, but the excellent spot effects from the PC version are bound to be included – after all, you can't have Star Trek without the noises from the doors, the transporters, the communicators and that rather odd background bleepy noise from the bridge.

All in all this is shaping up to be a game that no trekkie can afford to miss, or indeed anyone who likes a good adventure. Ahead warp factor one... CU

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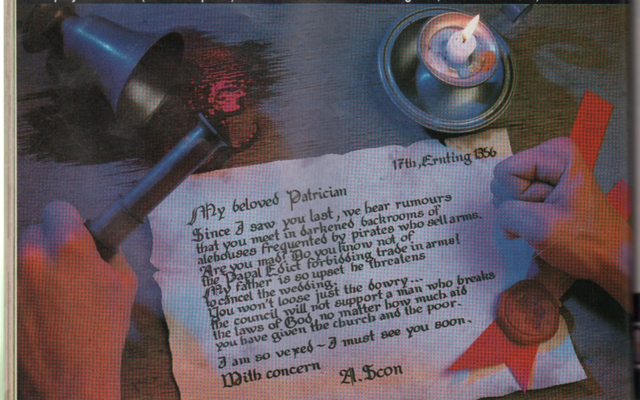
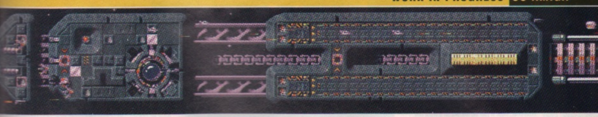


17th, Ernting 1356

My beloved Patrician
Since I saw you last, we hear rumours
that you meet in darkened backrooms of
alehouses frequented by pirates who sell arms.
Are you mad! Do you know not of
the Papal Edict forbidding trade in arms!
My father is so upset he threatens
to cancel the wedding.
You won't loose just the dowry...
the council will not support a man who breaks
the laws of God, no matter how much aid
you have given the church and the poor.
I am so vexed ~ I must see you soon.
With concern
A. Scon



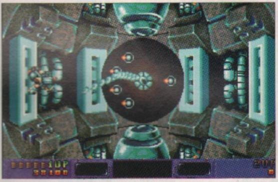
URIDIUM 2

W I P

Flying faster than a speeding space ship, Jon Sloan swoops down to look at a sequel seven years in the making.

Does anyone remember the C64? All those wonderful 8-bit graphics, tiny sound, and lousy games? Well, that's almost true, there were a few brilliantly coded efforts that served to define the state of games to come. One of those was *Uridium*. Designed by ace programmer Andrew Braybrook, it placed you at the helm of a super-fast space fighter flying over the tops of huge dreadnoughts blasting hordes of nasty aliens before landing at the other end to set a self-destruct mechanism to blow the dreadnought to kingdom come. It swept the board for games awards in 1986 grabbing such accolades as Best Arcade-Style Game, Best Shoot 'Em Up, and Runner Up for Game of the Year. It comes as no surprise then that a sequel is in the offing. What is surprising though is why it's taken seven years to reach our screens.

Actually the answer lies in the hands of the lawyers and receivers who were wrangling over who actually held the rights in the original game. Besides, Andrew and Graftgold were busy designing other hits, like *Fire & Ice*. With that question cleared up all that remains is to tell you what the sequel is like.

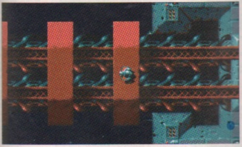


You complete each level by collecting victory pick ups from special enemy ships. Once you've got enough you can land and get out to destroy the dreadnought's generator.

GETTING STARTED

The plot for the two games are very similar with you once again in charge of the tiny Manta space craft racing across the tops of huge battle cruisers blasting away all opposition before landing and attacking the main generator.

The craft itself is one of the most manoeuvrable ships yet seen in an Amiga blaster, incorporating over 46 animation frames. The whole thing moves along at a cracking pace and Andrew is rightly proud of the 50 frames per second update. He originally used the scrolling system from *Fire & Ice* in an early version but soon found it to be inappropriate for *Uridium* as the scrolling actually outstrips the processor's ability to build up new data at the screen edge. However, being a programming genius, it wasn't too long before he'd sorted the basics out. In fact, he worked it out so well that the finished version will sport not only a two-player option but also a drone option. This means that one or two players will be followed by ghost ships which can be jumped into when your primary one explodes.



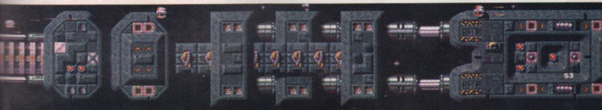
The dreadnoughts are absolutely massive, but your ship is so fast that you'll soon find yourself overshooting if you're not too careful.

The background dreadnoughts are gigantic sprawling affairs that take up a good 12 screens in length and were one of the first elements that he worked on. Many of the graphics were drawn by Phillip Williams in a mix of 16 and 32 colours, with Andrew using a custom auto-mapper to lay down the blocks in the correct places. These ships are not just decoration, however, as they serve as hangars for the various flying enemies and as stages for the ground-based tanks. Also there'll be raised sections of superstructure to avoid and bridges to fly through.

ENEMY ATTACK

The enemy attack waves were originally direct ports from the C64 version but the code required a lot of chopping as things have moved on a long way since 1986. Once it had been set up Andrew decided that the waves were a little bit too difficult and intelligent so were toned down some. The Manta craft will still need all of its impressive manoeuvrability though to outfly the enemy. Fortunately, there's a new range of special weapons to collect including a torpedo which targets ground forces and a useful homing missile. However, the enemies have been beefed up to cope with these specials and now have chaff which confuses homing missiles and leaves them free to attack you. There's also a tricky chaser ship which follows you wherever you go blasting all the time.

All in all *Uridium 2* is shaping up to be one helluva game. It should be complete by early October so we'll bring you a full review next issue. Personally, I can't wait for the title music featuring a didgeridoo! CU



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*DPIII needs 2MB min. for anim

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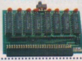

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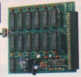

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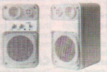

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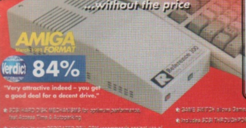

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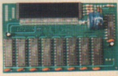

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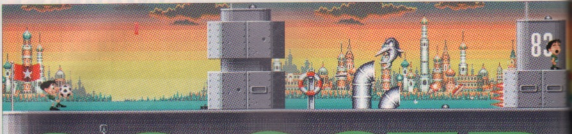


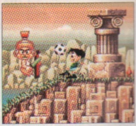
SOCCER

Following all the pre-match hype, you'd expect Krisalis' *Soccer Kid* to be something special. After all, it's been in production for the best part of one-and-a-half years, and had more column inches written about it in the computer press than any other game in recent memory. Thankfully, the finished version of this soccer-cum-platform hybrid is now upon us, and, to put it mildly, it's stunning.

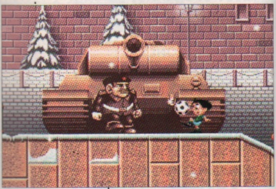
The game begins with an animated intro that's been painstakingly scanned in from original artwork. It tells the story of how the World Cup has been stolen during the 1994 finals by an alien trophy collector, who subsequently smashes into a nearby asteroid while making his escape. The force of the collision shatters the World Cup into five separate pieces which crash to Earth, landing in five different countries. Watching the events unfold from his bedroom, the eponymous Soccer Kid vows to collect all the missing pieces of the cup and thus save the competition from ruin. Hurrah.

GETTING STARTED

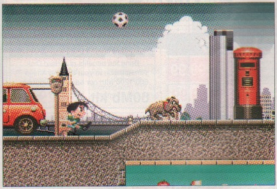
The first level kicks off in Soccer Kid's Home Town, and from there progresses around the globe, as he seeks to find the missing fragments of the Cup and, er, glue them back together. In all, there are nearly 30 levels to complete, plus another five bonus stages and numerous hidden sections to uncover as you progress through each scene. There are five main levels, with most divided up into three stages. These, in turn, are then split into two sections apiece, so it's not a game you're going to complete in a day!



Knock this guy on the bonce and his head rotates faster than a spinning top.



Apparently, the Cold War isn't over as Soccer Kid has to take on virtually the entire Russian Army singlehanded. It may not be politically coreect but it makes for fun gameplay.



What's this? Red postboxes, minis, parking meters and the Tower Bridge? We must be in London. Watch out for the pit bulls!

Each level is set in a particular country, be it England, Italy, Russia, Japan or the USA, and each stage has a particular theme running through it dependent on the country in which it's set. For instance, England involves an encounter with bolshy tourists in London, a jaunt in the countryside, and a kickabout in a grim Northern town. In complete contrast, Italy sees you wrestling Roman gladiators in some ancient ruins, taking a soaking in Venice and getting run down by mopeds on the Riviera.

At the end of each level, there's a guardian to beat and these also reflect a particular country's cultural heritage. In Russia you're up against a gymnast with a deadly leg kick and in Japan it's a body-crushing Sumo Wrestler. England provides a rugby player while in the US it's an NFL quarterback and Italy pits you against a Pavarotti lookalike who spews out a series of deadly musical notes. They're not really that difficult to beat, but it helps break up the levels nicely, and kept me amused anyway.

CARD COLLECTION

The aim of each level is to collect 11 hidden football cards, like the type you can buy from your local newsagents and cost an arm and a leg to collect the set. These are scattered all over the place and can be found perched on top of trees, down hidden sewers, hanging suspended in mid-air, or any number of other places. Once you've collected the alloted number (and it's easy to miss some!), you'll be granted entry to a special bonus level where the idea is to blast away at a series of blocks, making your way to the top of a multi-level platform to find a missing piece of the World Cup. Like the main level, this is against the clock, but the game's designers haven't been so generous here, and there's not much time to kick away the walls and find the trophy. Fortunately, you

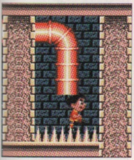
KID

John Mather's very good at dribbling, especially after a few pints, so we thought he'd be an excellent choice to review Krisalis' all-new soccer sensation.

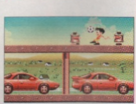
get three attempts at the bonus stage – but only if you collect all the cards for each scene! Once you've collected five pieces, the World Cup is restored to its former glory and it's 'game over', but Krisalis purposely didn't provide the end sequence on our review copy, so we can't tell you what happens. We're promised something a bit special, though.

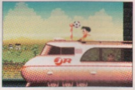
BALL CONTROL

You'll soon find out what a flexible chap Soccer Kid is. Not only can he jump and run about the screen, but he's capable of pulling off a series of stunning shots with a football that's constantly at his feet. Our football mad hero can use this ball to clobber any of the game's many adversaries or collect some of the huge amount of bonuses or 'special power' icons scattered around each level which would otherwise be out of reach. In all, there are more than 15 shots available to the Kid and it's the ease with which these can be pulled off that's the key to the game's playability. He's capable of performing bicycle kicks, flying headers, back heels, power shots – you name it and he'll be able to do it. Using the ball as a weapon is the only way to defeat the numerous nasties which populate each level, and you'll definitely not get very far if you decide to leave your ball behind. In fact, some areas aren't accessible if you don't use the ball as a springboard, and each shot has its part to play during the course of the game. Whether it's collecting bonuses by lobbing the ball through a couple of basketball nets or using it to break down protective barriers, it's essential to use it to maximum advantage.



Ouch! Get sucked up by this vacuum and you'll end up being deposited on a bed of very sharp spikes.





The Bullet Train hurtles along at a frantic speed. Watch out for the overhead tunnels or you'll wake up with a headache.

Graphically, this is a stunning game. Even more amazing is that most of it is the work of one person, in-house graphic artist Neil Adamson. Soccer Kid himself is made up of tons of frames of animation, and is probably more pliable than a piece of putty in the moves he can pull off. Just as much care has been taken with the background detail, and each scene looks completely different. By using a dual playfield, Neil has managed to use eight colours for the foreground and eight for the background. This might not seem much, but by using copper effects for the sky, the number of colours on screen has been further extended and gives the game a definite 'console' feel to the proceedings. And just wait until you see the CD32 version Krisalis are working on – it's simply spectacular, with 256 colours, an extra level that got squeezed out of the floppy release, and CD quality sound!

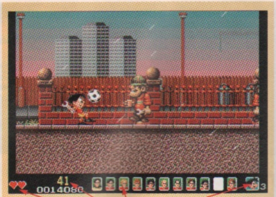
ON THE HEAD, SON!

The Kid has an amazing number of trick shots at his disposal and they're all controlled by simple joystick and fire button combinations. To get Soccer Kid to kick the ball, simply press the firebutton and push the joystick left or right to make the ball fly off in the required direction. Another useful shot is a simple back heel which is great for taking out enemy nasties that are following hard on your heels. Simply pull back on the joystick in the opposite direction you're travelling in and the ball will be sent into their path! To enter 'trick shot' mode, simply press the firebutton to make Soccer Kid tap the ball on his foot. From here, a whole range of shots open up. For instance, pushing the joystick upwards will prompt the Kid to lob the ball up into the air, while pushing the stick in the direction he's facing will make him kick the ball long and hard. To pull off a flying header, simply kick the ball straight up as before, then jump up, press and hold the fire button and push the joystick in the direction Soccer Kid's facing to make him head the ball in mid-air. Pulling down on the joystick while in 'trick shot' mode makes Soccer Kid stand on the ball – while still perched on top of the ball, push up on the stick to see him jump high in the air, a trick you'll need more than once in the game. The best trick, however, is the overhead kick. To pull off this stunt, press and hold the firebutton down, then push the joystick up to make Soccer Kid flip the ball onto his head. Now push the joystick away from the direction you're facing to perform the overhead shot. This might sound complicated, but after a few minutes practice, you'll be able to pull off any of these shots as easy as pie.

LEVEL BEST

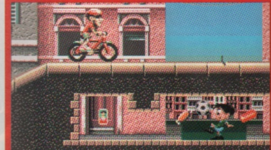
There are so many brilliant touches in the game, it's difficult to know where to begin. There are two unusual stages that deserve special mention – one is set on top of a Japanese bullet train and the other onboard a Russian warship. The bullet train is made up of numerous different carriages, and is busy racing across Japan. In a sudden twist, the game now scrolls from right to left instead of the usual left to right, »

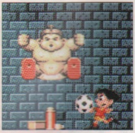
»


41
0014080
3
One heart is lost each time you come into contact with an enemy sprite.
There's a time limit for each stage – better get a move on.
Collect 11 soccer cards and gain entry to the game's bonus stages.
This indicates the number of lives remaining.

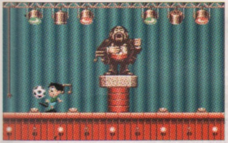
PICK 'EM UPS

Scattered around each level are various treasure chests. Whack the ball against them a couple of times and they spill open, revealing a number of bonus-giving fruits as well as various 'special powers'. These include extra time units, an extra heart to top up his energy level, temporary invincibility, extra lives and a pair of speedy boots for racing around a level. Look out for hidden icons, too. You never know when you might stumble across them.





Soccer Kid takes a pounding underneath an 80-stone Sumo wrestler.



This Pavarotti lookalike has a blistering vocal cord which can knock poor Soccer Kid senseless.

and you have to watch out for approaching tunnels or else you'll end up with quite a headache. Each carriage contains some sort of reward or bonus points to pick up as well as numerous adversaries. The same can be said about the battleship, although this time you're pitted against the entire Russian navy and some devious tricks and traps.

The Japanese Factory level contains one of the most amusing adversaries you'll come up against in the form of small mechanical robots which, when hit once, spin round making strange mechanical bleeping noises, and then explode when you hit them a second time. Other enemies to watch out for include manic moped riders who'll still hop about the screen once you kick their bikes away and coal moles which suddenly raise their head above ground to see what's happening. There are tons of other enemies inhabiting the game's many levels, and most are level specific, although some will pop up again later.

SOUNDS GOOD

The game's sonics are also impressive. Each level has an appropriate musical score in keeping with the setting, and there's a whole host of sampled sounds to accompany the on-screen action. It's difficult to see where any improvement could be made, although the music that accompanies the Italian level wasn't really up to the same standard as the rest. Some sampled speech would have been nice too, but then Krisalis have done wonders to cram everything onto four disks as it is, and any further additions would have meant paying for an extra floppy.

And don't worry about excessive disk swapping. Krisalis have organised the game disks so it's kept down to a minimum. There's no swopping required during a level, and the more memory you have, the less disk swops will be necessary.

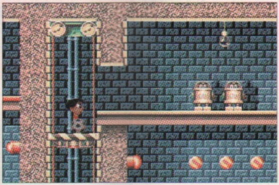
The game automatically takes advantage of any extra RAM you might have, so A1200 owners are at an advantage straight away.

IMMENSE FUN

Soccer Kid is an immense game and lots of fun to play. The action is relentless, there are plenty of pick ups and bonuses to collect (essential in this type of game), and the graphics and animation are superb. Best of all, the ball bounces about the screen in a highly realistic manner. Surprisingly, this wasn't much of a programming challenge, but it looks impressive nonetheless.

From Soccer Kid's cheeky grin cuteness to his amazing ball-handling expertise, this game shouts class. It's definitely a contender for one of this year's top 10 games, if not the top spot its CU

Each level is honeycombed with secret passageways crammed full of hidden bonuses.



Meep. meep. These cute-looking robots have an electrifying way of greeting Soccer Kid. Give them a good kicking with your ever-lasting ball and they'll soon get the message.

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GENRE:	**PLATFORM**
TEAM:	**IN HOUSE**
CONTROLS:	**JOYSTICK, KEYBOARD**
NUMBER OF DISKS:	**4**
NUMBER OF PLAYERS:	**1**
HARD DISK INSTALLABLE:	**NO**
MEMORY:	**1Mb**

GRAPHICS	94%
SOUND	90%
LASTABILITY	88%
PLAYABILITY	93%

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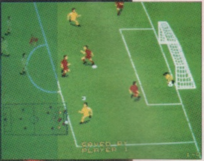
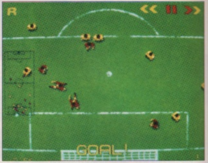
Being an Arsenal supporter, what does Paul Presley know about football? Enough to say that this is a damn fine game indeed...





One nice feature of *EC* is that it can be played either from the side or from overhead, catering for almost everyone's taste.

EUROPEAN CHAMPIONS

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4 SKILL LEVEL
MINUTES

AMIGA SCREEN STAR

I remember playing *Kick Off* as a lad. My finest moment was losing 4-2 to a certain Gary Penn in an old EMAP *Kick Off* World Cup Final, in what was an eerily similar match to the 1966 World Cup Final (right down to the controversial 'ball not crossing the line' goal). I remember at the time thinking 'Well, this will never be beaten by another game.' But then came *Kick Off 2*, followed by *Sensible Soccer* and, most recently, *Goal!*. Anyone with half a brain was switching to an overhead view, stopping the ball from sticking to the player's feet and adding 'after touch'. Now the football playing fraternity of Amiga owners is as divided as Bosnia-Herzegovina, with just as much chance of a peace plan being put into effect.

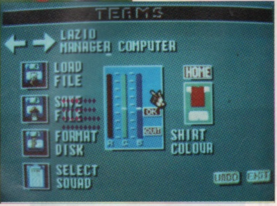
Above: **The overhead view is the preferred choice for most as it makes it a little easier to determine who you're passing to. Plus, strangely, it becomes easier to read the in-game commentary whilst playing.**

So, as if three warring factions wasn't enough, along come Ocean throwing another splinter group into the fray, except these guys have a secret weapon. With *European Champions* the ball sticks to the player's feet. That's right, sticks. And it still retains practically all of the playability that's come before. As if that little fact wasn't enough, *European Champions* also proudly boasts an optional side-on view to witness the action. It seems that Ocean have decided to cater for just about all the remaining unsatisfied tastes, while still making the game accessible to the devotees.

BACK PASSING

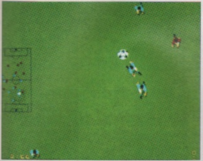
As to the controls, they are just as easy (or tricky depending on personal skill) to get used to as *Kick Off's* were, and when mastered allow you to play some really exciting football. It's fast, it's action-packed, and it's completely intuitive.

First up is the 'ping' pass. As you run around the pitch, you'll notice a little arrow above your player's head. This simply indicates the direction you'll pass in should you just flick the fire button (the receiver also has a halo around his head to make it clearer). What's more, if you press fire before he receives it, you'll enter 'one-touch' mode, in which the computer will automatically either head, pass, volley or shoot the ball the moment he gets it, depending on tactical positioning. This can lead to some


TEAMS

LAZIO
MANAGER COMPUTER

Every team from the Premier league is in *EC*, along with every team from the major leagues in France, Germany, Italy, etc. What's more all the players are there too, with stats and abilities to match.

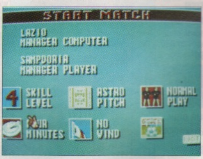


The best way of passing the ball is called 'ping' passing. You simply flick the fire button and the ball sails towards the indicated player. For some really spectacular play, press fire before he gets to it and engage in some 'one-touch' football.

thrilling goal mouth action, with the ball floating from one player to another before ending up in the net.

Following that is 'cursor mode'. Holding down the fire button reveals a movable cursor in front of the player. Simply point the cursor in the appropriate direction and let the button go. It sounds a bit tricky to get used to, and to be honest it is. But once mastered it makes for some really interesting football, with power shots, dummies, side passes and other football-related terminology springing to mind.

Finally there's 'select' passing. It's similar to ping passing except that you let the player run with the ball while you select who to pass to. It isn't used much but can prove useful when the time comes. Of course, add to that after touch, sliding tackles, barging and all the other usuals and it begins to sound like it could be a bit tricky to play but it is, in fact, brilliant (for there is no other word).



To help you get used to the game, before each match you are given the opportunity to alter various options, including turning off some of the passing modes to let you master one at a time.

TOUCHLINE

And none of that is counting the managerial side of things, where you can select, edit and create teams; play leagues, cups friendlies; edit on-field strategies, player positioning, skills and attributes and just about anything else you could want.

But go on, ask the all important question. I know you want to. Is it better than *Sensible Soccer/Kick Off 2/Goal!* (delete according to preference)?

WELL IS IT?

That's a question I'm not going to answer. Let's just say that it is as good as *Sensi* and Co. I know that half of you reading this swear by *Kick Off*, while the other half stand firmly in the *Sensible* camp (has *Goal!* been around long enough to gain a fan club?), so I'm not likely to make any converts. The people that I believe will find *European Champions* appealing are the ones whose main gripe about the others was that the ball didn't stick to the player's feet. So, providing you don't mind that little feature, and presuming you're willing to spend a few sessions getting used to it (which, after all, is exactly what you did with the others), you're likely to find that *European Champions* has just become the fourth real contender for the computer football league championship.

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RELEASE DATE:	AUGUST
GENRE:	SPORT SIMULATION
TEAM:	OCEAN
CONTROLS:	JOYSTICK
NUMBER OF DISKS:	2
NUMBER OF PLAYERS:	1 /2
HARD DISK INSTALLABLE:	YES
MEMORY:	1Mb

GRAPHICS	89%
SOUND	85%
LASTABILITY	90%
PLAYABILITY	93%

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OVERALL 90%

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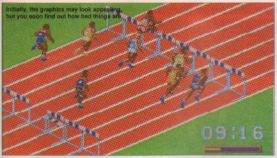

Initially, the graphics may look appealing, but you soon find out how bad things are.

SUPER SPORTS CHALLENGE

MICROIDS OUT NOW £25.99

Why do I have to review this sort of rubbish? This sad piece of software is probably the worst sports sim I've ever had the misfortune to boot up. After last year's crop of dire Olympic cash-ins (*Games Espana*, etc.), I thought we might be spared similar travesties this summer, but Microids have put paid to such wishful thinking!

There are 10 different sporting events to participate in, ranging from the 100m sprint, through the shot putt to the 4 x 100m relay swim. Up to four players can take part against computer controlled opponents, although only two human players can compete against each other simultaneously (and only in certain events). The overall aim is to compete in each event and collect the most gold medals, although it's possible to pick and chose which events you want to enter.

Rather than opt for the traditional joystick thrashing techniques as used in aging classics, such as *Daley Thompson*, Microids have come up with a number of different control methods, each one specifically tailored to individual sports. For instance, in the 100m sprint the player has to draw upon a limited store of energy which enables his on-screen sprite to either speed up gradually or make a sudden burst of acceleration. This is achieved by either pulling the joystick to the right or stabbing the fire button repeatedly. In another event, the high jump, the controls become much more complicated and require a series of joystick and fire button combos to make your competitor twist his body through the air and over the bar.

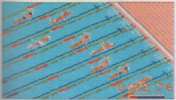
Unfortunately, the on-screen action fails to set the pulse racing. For starters, disk access times are horrendously slow. It's not much fun staring at a static screen while listening to the disk drive whirring away! Another drawback is the poor quality animations – linking frames have been skipped so that competitors jump about the screen as if they're having an epileptic fit. Sonically, too, things are disappointing. Sound effects are kept to a minimum, although there's a choice of opting for a rather grating in-game tune if you so desire. Where's the roar of the crowd, the grunts and groans of the competitors, the inane banter of David Coleman...?

The biggest drawback, though, is the control system. Merely tapping the fire button at the required time, or making a series of tugs on the joystick, is hardly taxing stuff. Because there's no joystick waggling involved, the on-screen action seems remote and detached, as if you're merely watching the proceedings rather than having any influence over them. Things also get impossibly hard later on in the game. The pole vault, in particular, requires pin-point positioning of the pole if you're not to land flat on your face.

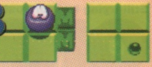
All in all, a complete stinker of a game, and outrageously priced at that. This is one to avoid at all costs.

John Mather.

18%


Hopefully, all the contestants might drown before this gets any further!

BLOB



CORE DESIGN OUT NOW £25.99

The rebirth of the puzzle game in recent years has thrown all sorts of weird and not-so wonderful titles onto the market. Unable to resist the temptation, Core are now taking their bite of what has turned out to be a very lucrative biscuit.

With *Blob*, Core have included generous amounts of action to appeal to people like me who like to zombie-out in front of a shoot 'em up. Who needs unnecessary brain work? The aim is to rescue Blob's expansive family, who make Earth Wind And Fire look like a solo act. Blob is, basically, a blob, and as such is rather limited when it comes to overcoming the legions of nefarious aliens which stand between him and his siblings.

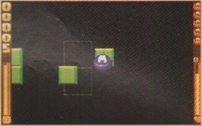
Each screen contains loads of different types of tiles which affect Blob in different ways. Some will bounce him to higher levels, while others will teleport him or slow him down. Using these tiles is the key to cracking the game. There are often several ways to complete a level, it's just a matter of sitting back and seeing if you can work out the correct route.

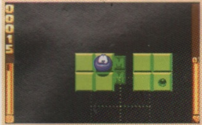
As Blob only has a limited amount of energy he needs to be kept as far away from the strength-sapping aliens as possible. Most of them can be destroyed by bouncing on them, but it's often best to just steer clear as that takes less time and effort. Should you run out of time though, an evil Blob clone appears. This chases your Blob around until you complete the level, or they touch which results in both their deaths.

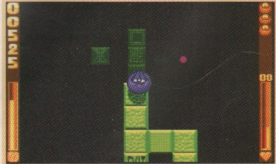
This is one of the better puzzle games of the year, although it's nothing remarkable. The graphics are cute with plenty of nice sprites making up for the minimalist backdrops. Ultimately, though, the game just doesn't offer enough long-term interest. Once you can complete the first 10 or so levels the game starts to become a repetitive chore and when that happens you won't come back to it.

Mark Patterson.

72%

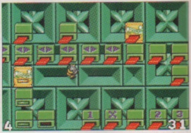

Different tiles do different things. It's important to learn what's what before you leap.


Left: If you're starved for puzzle action, you could do a lot worse than Blob. At least it makes a change from those *Lemmings*.


Blob himself is an excellent character, with loads of different animations.

Still trying to figure out the connection between Madness and Quavers, Jon Sloan goes...

ONE STEP BEYOND



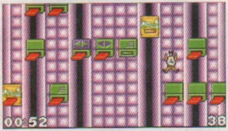
Just why Ocean decided to name a puzzle game, that's promoting a snack, after a track by Madness is anyone's guess. But I suppose they had their reasons. Still, silly names aside what's the game all about?

It's a puzzler which is, in concept, very similar to Ocean's earlier effort, *Pushover*. Given that they were both written by the same bloke I suppose you couldn't really call it a coincidence. The game stars Colin Curly, that strange dog-like creature who also stars in the Quaver ads. You know, whenever he gets a Quaver he goes completely curly and eats just about everything in sight (I still don't understand quite why eating something that's supposed to counter hunger should make you so hungry). Anyway, Quavers feature strongly in the gameplay with a packet designating the start and end of each level.

PLOTS AWAY!

Unfortunately, *One Step* has the same old contrived plot. Colin is playing a heavy session of *Pushover* whilst snacking on his favourite food. Anyway, just as he completes the last level he munches his last Quaver, and this combination of taste and triumph thrusts him into the machine. Colin is now trapped in his Amiga and the only way out is to get to the next packet of Quavers. Yes, silly isn't it.

Inside the machine *Pushover* has warped into a totally new game consisting of tiles or platforms which Colin stands on. To escape he's got to reach the packet of Quavers at the end of the level by jumping from platform to platform. The snag is that the platforms close when he jumps off them and he's got to close every one to complete the level. To make matters worse some of the platforms have different abilities which can affect the other ones or even Colin himself. For instance, some cause all the others to open again or catapult Colin off at an angle. If that wasn't bad enough he's got to complete it all in a set time limit! It's up to you to use your joystick skills and keen brain to guide Colin on the best route to take through the maze of platforms.



Colin performs all sorts of facial contortions when he's falling. I think that this jump may be a little too far for him this time though.

FIRST IMPRESSIONS

Initially, the game appears very bland with the main sprite taking up very little screen space. It opens poorly with the first level consisting of just three platforms set in the corner of the screen. These prove to be a pushover! Fortunately, in later levels, the whole screen is taken up by platforms leaving you very little time to decide on the best route to take. The difficulty curve is probably pitched just right as the first few levels are pretty simple and allow you time to get used to controlling Colin. However, once this has been mastered more complex puzzles are set which contain some of those special tiles featured in the panel.

Fortunately, old Colin is a pretty limber dog creature and, if you hold the fire button down, can leap further or higher than normal – the pay off for this is that he's often stunned when he lands losing you precious seconds.

FRANTIC TIME

As you're up against a time limit you don't have long to decide which route to take, especially when there's loads of special tiles on screen.

Many levels have very tight time limits so you'll often find yourself repeating them over and over again till you get the timing right. One annoying aspect is that Colin has to perform one of his Quaver curls at the end of the level. It's annoying 'cos he takes up to three seconds to do it which can lose you the level. Maybe that was a concession for the license rights.

All in all, *One Step Beyond* is a fun game. The puzzles aren't too hard but there's 100 levels so they should keep you going for a while. The music is plain, but not too intrusive, and the graphics, though simple, are workman-like. Colin himself is OK as licensed beings go, but he is a little tricky to control, which can be frustrating at times. Still, fans of the genre will like it. CU

ICON-TASTIC

There are a number of tiles that feature special properties. These can make Colin leap about like a whirling dervish or simply open or close a set of tiles adjacent to them. Here's a run down.

Your common or garden standard tile. It closes once you leap off it.

This happy face designates a safe tile. You can jump on or off as many times as you want.

These numbered tiles must be closed in the order indicated by the numbers. This doesn't have to be consecutive, i.e. you can close other tiles in-between the sequential ones so long as they keep the same sequence.

Delay. These act like timers so that once you've jumped off they don't close for a certain longer period.

These tiles don't seem to know their own minds and close and open constantly at a fixed speed.

The horizontal shutter closes all tiles in the same line as it. So don't go jumping off it onto one on the same level 'cos it won't be there when you land.

The horizontal opener has the opposite effect to the shutter. Simple really.

This shutter tile closes off all those on a direct diagonal to it. Some levels are cleverly designed so that stepping on this tile can mean you close virtually all the level.

The bounce up sends Colin winging his way into the heavans directly above. Be careful to make sure that there's a tile there 'cos this closes after use and could leave Colin plunging to a painful death.

The bounce down closes when you land on it dropping you down to a tile below (hopefully).

The bounce up left sends Colin flying off at an angle. His somersaults send him to another platform up there.

The bounce up right does the same thing as the bounce up left, only opposite (uhh?).

QUAVER ZONE 1

FAST FOOD

Film licenses have long been an established genre within the game industry but there seems to be a growing trend for food licenses. Yes, that's right... food licenses! In recent times these have taken the form of Chupa Chups lollies appearing in every scene of *Zool*, plus a free one in the box, and Penguin bars all over *Robocod*. More recently there was widespread promotion for Lucozade in Team 17's excellent leaper, *Superfrog*. In that game the mighty recuperative juice actually transforms our hero into his super powered persona.

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RELEASE DATE:	OUT NOW
GENRE:	PUZZLE
TEAM:	RED RAT
CONTROLS:	JOYSTICK
NUMBER OF DISKS:	2
NUMBER OF PLAYERS:	1
HARD DISK INSTALLABLE:	NO
MEMORY:	1Mb

GRAPHICS	65%
SOUND	66%
LASTABILITY	85%
PLAYABILITY	84%

> *An unassuming but ultimately addictive puzzler. Worth a look.*

OVERALL 75%

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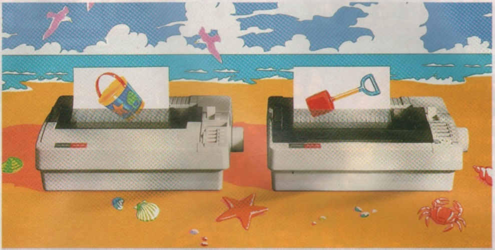

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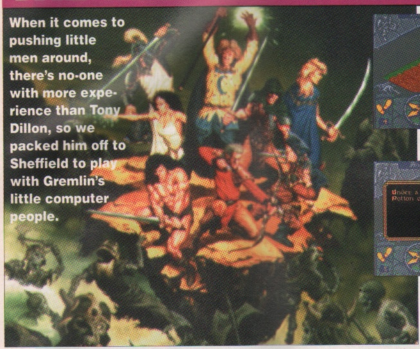
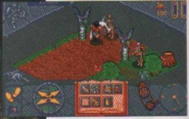
HEROQUEST 2

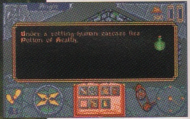
THE LEGACY OF SORASIL

When it comes to pushing little men around, there's no-one with more experience than Tony Dillon, so we packed him off to Sheffield to play with Gremlin's little computer people.





Angor the Barbarian engages in a particularly nasty argument with a couple of skeletons. Just check out those new improved graphics!



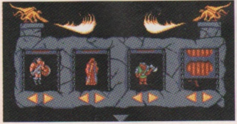
Under a rotting human carcass lies
Potion of Health.

When you kill monsters, some of them will leave behind useful artifacts, like this potion.

I don't know about you, but I thought *Heroquest* was a really good game. Then again, I've always been a fan of that kind of small scale strategy adventures, going back to *Laser Squad* and back even further to games like *Rebelstar Raiders* on my ZX Spectrum. Games where you can take control of huge armies are all well and good, but there's something about controlling single characters that gives the game a more personal touch, turning it almost, but not quite, into a role playing title. It was a very simple title, to be sure, and doubtless that had a lot to do with the fact that it was Gremlin's first boardgame conversion. Just take a look at *Space Crusade* to see how they improved their game system.

BIGGER, BETTER, FASTER!

For the past 18 months, though, those likely lads from the ex-steel capital of the world have been busying themselves with a sequel to that original game. The instructions were clear – find out everything that could be improved with the original, improve it and then make it bigger and better still. When you're working with a tried and tested formula, surely making it better can't be the easiest thing to do? Don't ask me how, but they've done it!



This is where you choose your party. Clicking on the doors brings a new character in, and the small arrows let you cycle between the types.

Despite your lengthy training session in *Heroquest*, the vile plague that sweeps the land of Rhiâ continues to sweep, leaving death and desolation in its trail. Even the Mystic Alamon, your lord and mentor, can do nothing about it. There is only one thing to do other than run away crying, and that's travel over the Shadow Mountains to the land of Kolchöth and collect two Talismans of Lore. Only these can save your once-delightful, now a bit of a desert, homeland. OK, so it isn't the most inspired plot, but these things rarely are.

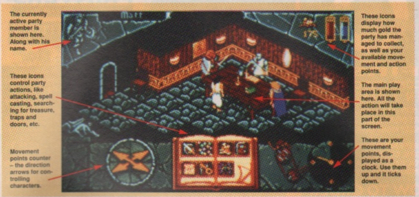
People already familiar with *Heroquest* will be mildly surprised by the layout of the game. Before, you were given your set of missons, and you could play them out in any order you wished. *Legacy Of Sorasil* takes a more linear viewpoint, whereby you have to complete a set of missions before you can progress to the next. For instance, to begin with only the first level, which is set in the lively location of the Barrow Mount of Yaserat, is available to you. Complete that, and you are offered missions two, three and four. These can be played in any order, but all must be finished before you can progress to the next three, and so on until all nine are completed.

I WANT MORE!

My first thought on seeing the game design was that nine levels could never be enough. Perhaps I was spoilt by getting *Heroquest* complete with the *Witch Mountain* expansion, giving me a grand total of around 24 missions to play with. Once I'd actually played through half a level, I realised that nine is about all you need. They are huge, easily four times the size of the levels in the original game, and possibly larger. Whereas the first level on *Heroquest* would take the average player 10 to 15 minutes to complete, I was

wandering around the Barrow-mound of Yaserat for a full 45 minutes, and was still nowhere near the end. No, I'm not a lousy game player, that just shows you how huge the levels are.

One of the biggest improvements to the game is the introduction of more than four different character types. Instead of being lumbered with a dwarf, a barbarian, a paladin and a wizard, you can now choose an elf, a cleric, a ranger and a mystic as well, giving you a total of eight different characters, from which you can pick up to four to take on your quest.



The currently active party member is shown here. Along with his name.

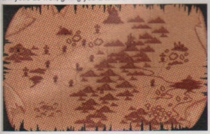
These icons control party actions, like attacking, spell casting, searching for treasure, traps and doors, etc.

Movement points counter – the direction arrows for controlling characters.

These icons display how much gold the party has managed to collect, as well as your available movement and action points.

The main play area is shown here. All the action will take place in this part of the screen.

These are your movement points, displayed as a clock. Use them up and it ticks down.

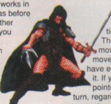


This is the entire game area at the start of the game. Only the first quest is shown, but as you work through, the game maps itself.

When you actually get into the game, seasoned *Heroquest* players will feel right at home. A similar set of icons lie at the bottom of the screen, and movement control works in exactly the same way as before – move to a point by either clicking on the square you want to move to, or by clicking on the direction arrows at the bottom of the screen.

ACTING LESSONS

Something that was always a little unclear in *Heroquest* was the difference between action points and movement points, which generally left you walking somewhere, doing an action such as a room search, and then finding that you couldn't move again. This time around, both are explained and both are displayed on screen. Movement points simply relate to the number of squares you can cross in that turn, and action points tell you how many actions you can perform in that turn, including walking. Every action uses up points, and as you move around, you'll see the action point clock ticking down. Thankfully, you can now move, search and then move again, but only if you have enough points left to do it. If you run out of action points, that's the end of the turn, regardless of how many movement points are left.

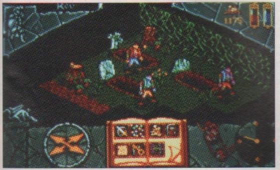


Item handling has changed drastically since the first game, as you now have an inventory to hold your weapons and treasure in. Yes, the shop is still there at the end of the level, but this time you can sell to it as well as buy. You may wonder what the good in that is. Well, when you kill certain monsters, they will leave treasure and sometimes the weapons they were carrying. These can be collected and sold for profit, or you can sell your old weapon and upgrade. Best of all, when one of your party dies, you can transfer the contents of their inventory to another player, so potions and weapons needn't go to waste.

CHANGES

Unlike the original *Heroquest*, you aren't restricted to the basic characters at the start. If you like, you can customise them to a degree, turning them from your average superheroes to your average superheroes with slighty bigger muscles, or slighty better perception. You have five points to spread over the six basic statistics of each character, and while you can raise and lower the stats to your heart's content, you can never get them any lower than the level at which they started.

One thing I always like about this sort of game is the ease with which you can slip into tactical play. In many games like this, you just seem to charge around in a large bunch, smacking hell out of anything you come across. *Legacy Of Sorasil* just can't work like that. For a start, there are too many routes through each level, so to get through you'll need to split up. Then you learn about defensive play (running away from heavy combat, in other words), along with constant security checks (looking for traps and treasure). The simplicity makes it all the more involving. There's no need to refer to the manual once you've read it, so you can concentrate on what you're doing without intrusion from complicated game mechanics or obstructive menus and commands.



As well as the improved character selection available, there's loads of new monsters to battle with. Here, there's a whole graveyard full of zombies to contend with.

SEEING IS BELIEVING

The characters are bigger than before, and far more detailed with a lot more animation. Unfortunately, this has led to less of the surrounding area displayed on screen than before, but that doesn't matter because the whole thing scrolls! Yes, scrolls! No more flipping between locations, and believe me when I say that this makes the whole thing a lot more playable.

I've really enjoyed it, and am currently looking forward to playing it a lot more. As a role playing game, I don't think it has the subtlety of something like *Worlds Of Legend*, and is far more fun played as a tactical strategy game. If you're after an RPG, there are a lot better, but if you want challenging gameplay and a game that's going to last, you can't go far wrong with this.

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RELEASE DATE:	**SEPTEMBER**
GENRE:	**STRATEGY/RPG**
TEAM:	**IN HOUSE**
CONTROLS:	**MOUSE**
NUMBER OF DISKS:	**2**
NUMBER OF PLAYERS:	**1**
HARD DISK INSTALLABLE:	**YES**
MEMORY:	**1Mb**

GRAPHICS	81%
SOUND	76%
LASTABILITY	85%
PLAYABILITY	89%

> *An excellent sequel to a very enjoyable game. Worth anyone's money.*

OVERALL 83%

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VIDI 12 AGA with built in
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GVP

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PD IN STOCK

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built in outline fonts, full graphics import (IFF and HAM), UK thesaurus, spelling checker & much more.
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Best selling feature packed word publisher with database.
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Special price. Limited period Only!
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The NEW standard in DTP *only* £249.99
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Personal Write *NEW!*......Postscript compatible..£17.99
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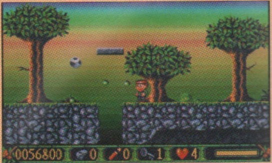
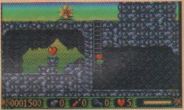
Protext 4.3 W/P..........................now only £39.99
Prowrite 3.3 *NEW!*................................£38.99
THE PUBLISHER DTP *NEW PRICE!*.....£36.99
TYPESMITH, FONT EDITOR *NEW!*..........£99.99
WORDWORTH 2 AGA...........................£76.99



NICKY 2

MICROIDS OUT NOW £25.99



Ladders leading into the ground might not reveal much at first, but follow them down, and you find out just how large the levels really are!

Nicky Boom is back! After rescuing his father from the clutches of the evil witch at the end of *Nicky Boom 1*, the evil that swamps the forest has yet to disappear. Could this mean that the witch wasn't responsible? You bet, sucker! So now Nicky has to go back into the forest and try to figure out exactly what is going on. As usual there are loads of possessed creatures and inanimate objects out to stop him, and there are plenty of items scattered about to help him, etc. As you can probably tell, it's all basic, standard and exactly what we've come to expect from a platform game.

You begin in the forest and work your way through five very, very large levels. Exact figures aren't available, but they're approximately one hundred screens in size. None of it's wasted either, as bats, bees, bears and spiked balls trundle about with their sights aimed straight at you. If you like, you can collect some supersonic whistles to blow them away, or use your more standard bubble gun. There's also sticks of dynamite that can be used to blow away areas of wall and floor, and if you're feeling really dangerous, you can try flying around on the back of a stork!

Traps include doors that need keys, blocks that fall for no apparent reason and bridges that collapse when you step on them.

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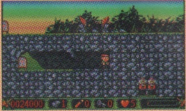


Nicky Boom wasn't a particularly inspired game, and I have to say that this sequel isn't much better. Platform games went far beyond this stage when *Zool* and *Robocod* hit the Amiga. In a world where people like their action 'hot, hot, hot', this is merely tepid. There's nothing really wrong with it, there just isn't much that's right either.

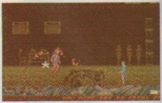
Tony Dillon

Some walls are softer than others! Keep firing, and you might discover a secret room.

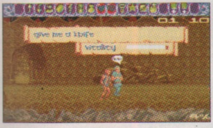
58%

BEASTLORD

GRANDSLAM OUT NOW £25.99



Take *Shadow Of The Beast 2*, remove some of the visual excellence, add a bigger and more involved game and you've got *Beastlord* from Grandslam – surely one of the weakest arcade adventures yet seen. The plot waffles on about a mythical forest full of squirrels that is kept in check by a unicorn, a hawk and a beam of light. One day, however, the unicorn is tied up, the hawk turned to stone and the beam of light stolen, and the forces of darkness take over the forest. Who steps forward to reclaim the land? No, not the Dutch. You – the Beastlord.



Top: The witch fires a deadly spell so you need to be invisible to avoid her. *Left*: You need to get a knife. If you can't be nice, be rude about it.

The game is played out over three parallax scrolling levels, each splayed over huge maps during which you hit people, eat a lot, occasionally order dogs and squirrels to fetch things for you and hold very simple conversations with very simple people. Just as well really, as you have to keep your mind on quite a few things. Time runs a lot faster than usual in this game, so your energy reserves can drop quite rapidly. The only real way to gain food is to beat people up, so you'll find yourself fighting a hell of a lot of the time just to stay alive.

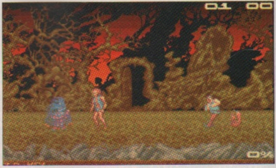
The design of the game means that you'll need to do a lot of searching about and mapping before you can really get into the swing of things – many locations can't be entered without specific objects, so be sure to find everything you can first. For example, on the first level, you can't enter the witch's house without the cloak of invisibility or you'll get zapped.

The controls are a little suspect, to say the least. The control of the main character feels slack and unresponsive, and the mouse-controlled bank of items makes the game impossible to play with a hand-held joystick. It isn't bad, and touches like the ripple effect caused by the cloak bring it up above the average mark, but only just.

John Mather

51%

Right: Calling up this window lets you talk to people, but would you want to talk to someone this unfriendly?



Should you free this guy, or is there a reason for him being locked in a net?

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INTERNATIONAL OPEN GOLF

Golf is a gentleman's sport. So how Paul Presley got into it is a complete mystery.

Well I don't know what it is but it sure ain't golf. Believe me, I know. I play golf and this isn't it. This is some kind of bizarre cross between *Operation Wolf* and the polygon generator in *DPaint* with golfing paraphernalia tossed in. I don't really want to go into gross detail about the elements of *International Open Golf* as it's already depressed me beyond belief and I wouldn't wish the same fate upon you. Briefly though, have a look at the following example.

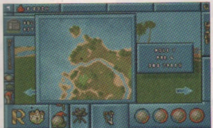
I'm 50 yards away from the green. The ideal club is a Sand Wedge. Unfortunately due to the strange control method of only being able to take full power, half power, three-quarter power or one-quarter power shots (with nothing in between), the only way I can actually take a 50 yard shot is to change to a Number 2 Iron and take a quarter shot. About as realistic as England's chances of qualifying for the World Cup (wrong sport I know, but I feel strongly about both).

IN THE BUNKER

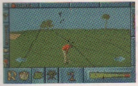
The trouble with golf games is that there is only one way that you can do it successfully – it's the three-click shot or nothing I'm afraid. One mouse click to start the backswing (starting the shot), one to start the downswing (i.e. select power) and one to hit the ball. Anything else just doesn't really work. You have to let a player decide precisely how much power he or she wants to use and exactly how much hook or slice (draw or fade if you're reading this in America) is needed or it just isn't golf.

The only way you can really change the game and make things better is to make sure the presentation and options are better than everyone else's. Unfortunately for Ocean, even if they had used the three-click method, the rest of the game would have let them down severely.

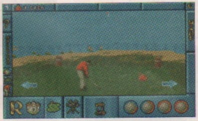
For example, a line in the manual describes the camera panning thus: 'When the ball stops [the camera] smoothly rotates to the new viewing position. This is the slowest option.' I don't know what dictionaries are being used in Manchester, but unless 'smoothly' is defined as 'with extreme jerkiness, having large gaps between frame updates' then I would suggest they send them back to the bookshop. At least the last bit was right. It is slow. This is the case throughout. The graphics, while quite nicely defined, are just extremely jerky and enough to put even Nick Faldo off the game for life.



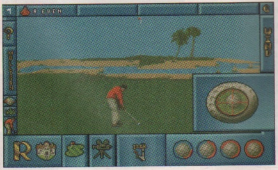
At any time you are able to call up a map of the current hole or the whole course, or take a sightseeing trip towards the current green using the revolutionary stuttering camera.



Putting works differently to the rest of the game. Determine what percentage of total power you'll need and press fire when the sliding bar reaches it.



Left: Here's how it works: Select your club, aim your shot then decide on either full, three-quarter, half or one-quarter power.



Below: With the power decided, the shot is taken by aiming the crosshair at the centre of the ball (or off to one side if you want to add draw or fade, etc.). Unfortunately, to simulate wind (or something) the crosshair constantly jumps about, impairing your progress.

IN THE ROUGH

You do get to take part in various different types of golf though, from skins to foursomes (an exciting little game involving two teams and just one ball per partnership) and the menus are all easy to use and pretty comprehensive. That's small comfort though when placed next to the rest of the game.

International Open Golf is simply a failed attempt to do something different with the golfing concept. All credit to Ocean for trying but let's face it, it was a doomed effort from the start. There's only one way you stand a chance of bettering *PGA Tour Golf* and that's to call your game *MicroProse Golf* (and I'll bet that's angered a few of you PGA purists out there). CU

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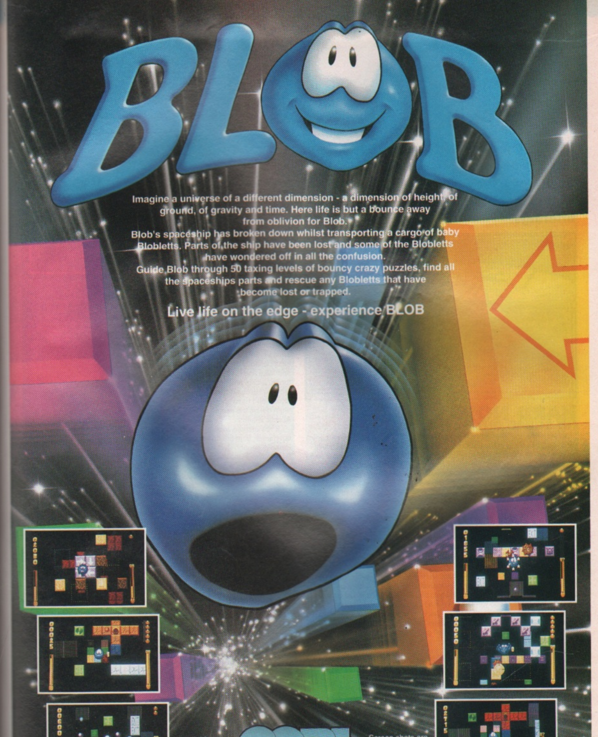
TEAM:	OCEAN
CONTROLS:	MOUSE
NUMBER OF DISKS:	4
NUMBER OF PLAYERS:	1-4
HARD DISK INSTALLABLE:	YES
MEMORY:	1Mb

GRAPHICS	♦♦♦♦♦♦♦♦♦♦50%
SOUND	♦♦♦♦♦♦♦♦♦♦50%
LASTABILITY	♦♦♦♦♦♦♦♦♦♦30%
PLAYABILITY	♦♦♦♦♦♦♦♦♦♦35%

> Completely misjudged attempt to convert the noblest of sports.

OVERALL 35%



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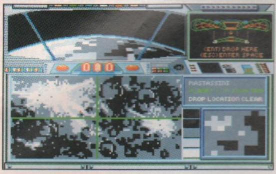
VFM

CU AMIGA's bargain basement is opened up once again for a look at the best of this month's budget offerings.



HARD NOVA

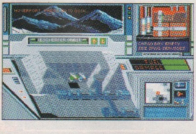
HIT SQUAD OUT NOW £9.99

I can still remember the first time I ever picked up a copy of *Hard Nova* many moons ago. Looking at the back of the box I can definitely recollect a thrill of anticipation as I read about this futuristic hybrid of space trading, combat and adventure. Could this really be the *Elite* beater I'd spent so much time looking for? Strangely enough, no it wasn't. All that was to be found inside this box was the lowest kind of PC port, containing the same keyboard-based, lack of action gameplay designed for a machine that ran at the same speed as a Commodore 64 with the graphics capability of a Casio electronic personal organiser.

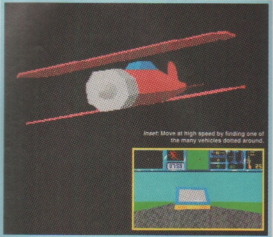
The plot is much the same as most other 'adventures' of this type, with you playing a freelance mercenary/trader who gets tied into some big piece of interstellar espionage, which leaves you flying between planets, shooting other spacecraft whenever you should happen upon them and chatting with people whenever you come across them. Nothing particularly inspiring, but then games of this type never are.

When I said the game was keyboard controlled, I wasn't joking. Most of the movements and menu options are key activated, with little concession towards the mouse at times. It all runs too slowly to be exciting, which is just as well because a burst of speed would have ruined the space battles. Rather than the big, fast polygons we're all used to, this uses a primitive plan view with small graphics and awful sound. This game has too many bad points to put in this small space, and not enough good points to fill a paragraph. Just awful.

39%



Once you drop from orbit onto a planet's surface you can zoom around the area in a nifty little hovership.



Inset: Move at high speed by finding one of the many vehicles dotted around.

MIDWINTER II – FLAMES OF FREEDOM

KIXX XL OUT NOW £12.99

Midwinter was a huge game. So large in fact, that there are very few people who could have possibly pulled it off. David Braben is one, Mike Singleton is another. This clever mix of 3D action and political strategy so captured the imagination of the public that a sequel was called for almost immediately, and Mike and his friends at Maelstrom didn't disappoint. The wheels have turned a cog, and things just got even better. The people of *Midwinter* have left their homeland and formed the Atlanta Federation with the people of Agora, and have once again called upon you as a freelance spy to help them defeat the people of the Saharan Empire, who control 42 of the 43 Atlantic islands.

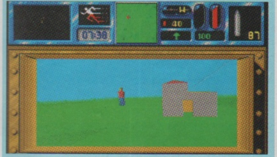
Each island is treated as a separate mission and each is just as hard, if not harder, than the one before. Mind you, the challenge laid on by each island is enough to class them as a complete game each! You want a challenge? This is the place to look.

In essence the game can be broken down into two components – travelling and the adventure segments themselves. All travelling is done in real time across a variety of landscapes using all sorts of vehicles. None of this 'leap in an F-15 and fly from base to base' used in lesser games. In *Flames Of Freedom*, you have to use whatever comes to hand, from a plane to a tank to a bus to a hot air balloon, each one performing as you would expect, although not working as 'true' simulations.

The adventure segments come into play when you reach a town or building. Entering these gives you a series of screens whereby you can talk to people, buy, trade or exchange goods or information, or convince others to join your cause.

As I've said, *Midwinter II* is a mammoth game, and one that'll take you a couple of months of hard play to win. Not bad for less than £13!

91%

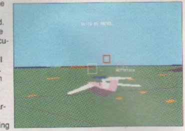


Interesting characters have a habit of standing around waiting for you to come along and brighten their lives with a taste of espionage.

F-15 STRIKE EAGLE II

KIXX XL OUT NOW £12.99

F-15 Strike Eagle was one of the first games MicroProse ever released. *F-15 Strike Eagle II* is one of the best. It's a fast, accurate and detailed flight combat simulation with all the frills and all the thrills. On an A500, it's great, on an A1200 it's superb.

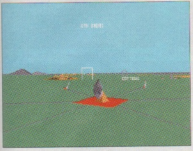


Things can get sticky for a fighter pilot in Central Europe – the skies are full of spotter planes and enemy MiGs.

Like most MicroProse sims, you name your character and then proceed through the ranks collecting medals and commendations until you reach your peak and retire. After entering your name, you are asked to choose which of the four difficulty levels to play under, and in which of the six theatres of war, ranging from the understaffed and underfunded catapult posse of Libya, to the Nuclear-armed Central European boys, whose tracking gear is so good they can tell which way your eyes are facing. Get all the formalities out of the way and you are given your first mission which, like most missions, involves blowing up a couple of enemy installations and getting back to base in one piece.

Then you're in the sky, and straight away you can see why Major Bill (now a Lieutenant Colonel) Stealey first chose the F-15 as a subject for a sim. It's very fast and very, very manoeuvrable. Forget stealth tactics, this thing can dodge bullets! At first you'll find yourself throwing it all over the sky, but before too long you'll be pulling off some breathtaking swoops, taking out enemy planes with your cannons and then turning to take out the pilot whose bailed out shortly before the plane hits the sea. If you don't already have it, then rush out and get it!

This radar base controls various SAM missiles across the region – If you can knock it out your journey home will be so much easier.



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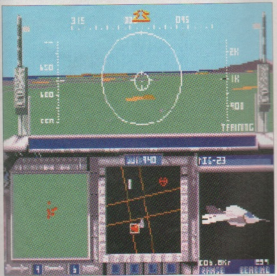
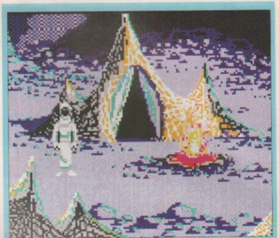


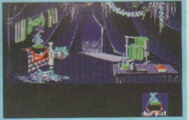
The view from the cockpit. There's a MiG-23 in sight, time to decide whether to take evasive action or to power up your heat-seeking missiles.



LOOM

KIXX XL OUT NOW £12.99

Lucasfilm have always tried to push forward the boundaries of adventure games. Ever since they came up with the point and click system first used in *Maniac Mansion* all those years ago, those plucky Americans have been struggling to find the ultimate control system – one that was completely intuitive and simple to use, but didn't restrain the player with easy problems or confusing syntaxes. Although *Loom* doesn't quite have if, it's very close indeed.



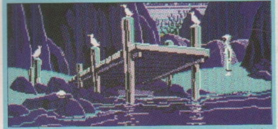
One of the earliest locations to visit. As with any adventure, be sure to check it out thoroughly for items to collect.

You start the game overhearing a discussion between the elders from which you learn that you are a 'Weaver', someone who can use the mighty Loom itself to weave magic. From here you have to travel the world, learning spells, perfecting your craft and above all trying to discover why your mother was kept secret from you. Oh, and there's a big bad wolf just around the corner, so you might fancy-vanquishing that along the way!

Anyone who has ever played a Lucasfilm game will know how much of the company's movie making experience has spilled over into game production, and *Loom* is no exception to that rule. Glorious backdrops frame the film-style action, and clever use of zoomed and panoramic shots make it seem even less like a game and more like a trip to the pictures.

The puzzles are balanced well, giving you some challenge but are always solvable. The manual states that this is a game designed to be completed – fair and difficult at the same time. My only criticism is that you can't speed up some of the preset sequences. Otherwise, a superb adventure.

81%



Early on you'll have to find some way to get on a boat here in order to travel on to new lands and new adventures.

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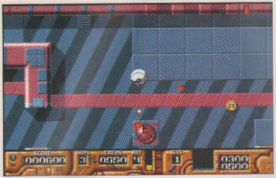
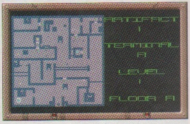


Keep an eye out for keys, which are dropped when you shoot some enemy robots. These let you access other parts of the level.

GALACTIC WARRIOR RATS

ALTERNATIVE OUT NOW £9.99



There's no point in saving your money. Take it to the shop and blow it all on better weapons and ammunition.

For the first time on your Amiga comes a game with rats-appeal. These aren't the sort of rats who are content to mill around bemused in mazes, oh no. They've tooled up with super-hard space craft and are right now making the universe safe for us by ridding it of a totally evil race of beings.

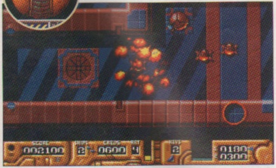
If you can remember the original *Xenon*, you'll instantly recognise the format of this game. You control one of these warrior rats, complete with futuristic spherical battle tank, guiding him through a series of maze-like levels blasting seven bells out of everything that moves.

This game is certainly challenging. The mix of exploration and blasting makes it one tough nut to crack. Frequently, when they're hit, an alien craft will leave behind either a key or a token. The keys are the things you need to keep an eye out for as they let you gain access to otherwise sealed off areas. Between levels you get to invest the spoils of your campaign by visiting the shop. Here you can purchase more ammunition, weapons and other extras to make your mission easier.

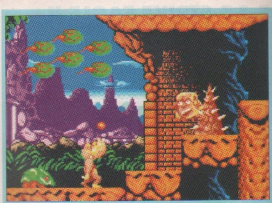
There are no outstandingly original features, but then you'd hardly expect anything mind-blowing for a tenner. My only real criticism is that the action is very sporadic. A bit more blasting and less of the exploration would have made this game a sure-fire hit. As it is, *Warrior Rats* is an original, diverting, and sometimes dull, action yomp.

75%

Left: Teleporters are everywhere, and not all of them lead to good locations. This one has taken you to a mysterious darkened room full of killer robots.

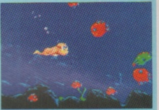


Your tank only has a limited supply of energy, so don't be afraid to do a runner if things are looking bad. Cowardice is the best policy!



TOKI

HIT SQUAD OUT NOW £9.99



Variety is the name of the game in *Toki*. There's even an underwater stage!

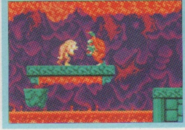
Ocean France have come up with some real corkers in the past, and their conversion of the *Toki* coin-op is spot on. If you're a fan of the original arcade machine, then you'll absolutely love the Amiga version as it's an almost identical pixel-by-pixel recreation.

There's not much of a plot. Briefly, Toki was a once mighty warrior who has been transformed into a Neanderthal ape by Bashtar, an evil sorcerer who has run off with Toki's girlfriend. Not very happy about all this, our hero sets out to track down the wizard and set his girly free. To do this, he has to travel through six platform-packed levels, filled with all manner of beasties only too eager to put your adventuring days to an end. Each level is previewed at the beginning, so you know roughly what to expect, and then it's straight into the action. Levels include a cave-like world, an underwater stage, a jungle, an underground inferno and a heavily fortified prison.

You're only armed with globules of spit to begin with(!), but there are five different types of shot available, including triple-fire and a neat flame-thrower effect that sends your victims to a fiery grave. Add to that an American football helmet that leaves Toki temporarily invulnerable, a watch icon that adds extra time and a baby Toki which grants an extra life, and you'll realise that the game's designers have given you every chance of making progress. There are also a number of gold coins, released after you've polished off certain nasties, and if you manage to collect 30 of these you'll also be awarded an extra life. Everything's against the clock, though, so you can't waste too much time exploring each level.

The controls are admirably straight forward. Pushing the joystick up makes Toki jump while pulling down allows him to crouch. By holding down the fire button and moving the joystick from left to right it's possible to spray his spittle around the screen. If a rope or vine is in close proximity, Toki will automatically climb, and if he dives into a water-filled pit, our simian friend will start to swim.

Graphically, this is just like the coin-op, although the sound is a bit of a let down and the in-game tune is positively grating after a while. Action-wise, this is a well-paced platform game, with plenty of obstacles to overcome and some highly inventive nasties – look out for the swinging apes and huge end-of-level monstrosities. Easy to play but difficult to complete, *Toki* is a polished game. It might be three-years old, but it's up there with the best.



A bad breath competition – ape style!

81%

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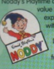

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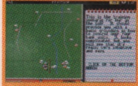
SMALL TiPS

Are you suffering from sleepless nights? Just can't close your eyes until you finish *Dune 2*? You've got two choices – Night Nurse or Tony Dillon's tips – which would you prefer?

ISHAR 2

Here's a snippet of help from those lovely people at Silmarils, for people who are finding it impossible to defeat either the first band of rogues you meet or the lizard king on the first island. Basically, don't attempt to take on either without a fully armed party. Instead of entering the fight at the start, head northwest to the village. Five people should have no trouble at all beating the bandits. For the lizard king, make sure a couple of your party members are armed with bows, and weaken him from a distance before you move in for the kill! There, that should make things easier!

WAR IN THE GULF



So you want to cheat, do you? Well, here's a rather snazzy, if a little obvious, cheat for Empire's latest wargame. On the filing screen, pop up a file and instead of entering your name, enter the words 'Let me cheat!' (Notice the single capital letter and the exclamation mark). Now whenever you look at the map screen, you'll be able to see the contents of every square. Also, if you press the left Amiga key and 'W' together, you will automatically win. That should improve your life nicely!

DUNE II

More useful hints, this time from the Virgin camp for Westwood Studio's superb strategic romp. A lot of people are having problems with the Harkonen forces wandering into their bases and smashing everything up. The best form of defence is this: Firstly, determine the direction of attack – as a rule, enemy units attack from one direction. Then build a line of around half a dozen concrete blocks extending from your base toward the enemy. Now build another line of blocks cutting across your first line at right angles, so that it faces the enemy. Now all you need to do is build rocket launchers along the wall, and that should stop most units from getting near your base!

ROBOCOD A1200

Just how many A1200 owners have rushed out to buy this gem of an update I don't know, but I bet they're all gagging to see the new levels tacked on at the end. If you're one of those people, then this is the cheat for you. On the title screen, type the following:

O.S. FRIENDLY

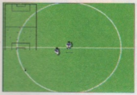
(Remember to put a space before 'Friendly'.) Now, during the game, press 'M' and you'll be prompted to enter a code. Enter a number between 1 and 49 to jump to any part of the original game, and use the codes 50 to 55 to see the new levels!

A-TRAIN

Not the easiest of games, this one, which is why we were so happy when Matthew Lake of Leicestershire contacted us with this astounding back door to success. All that's required of you is to type 'CHEATERCHEATERWIMP' on the main screen when playing the game, and you'll gain a bonus million dollars plus all your building plots will be miraculously filled!

GOAL!

Playing football is never easy, especially when you're controlling tiny pixel players. Fortunately top coach, Tony Dillon, is on hand to help you improve your ball control. On with the tips...



So, you want to know how to beat the best, huh? The secret, my boy, is all in the wrist – or should I say, all in your ball control. In *Kick Off*, you could intercept the ball and then charge with all your might up the field without losing breath, and still control the small black and white globe. *Goal!* is a completely different kettle of fish, as they say, but stick with me and I'll show you how to get that ball to go where you want it to.

KEEP CONTROL

The first things you have to keep an eye on are your speed and the qualities of the player you are currently controlling. Although you can run as fast as the players in either of the *Kick Off* games, I would strongly advise against it. It might be fine for charging all over the shop, but what happens when you want to turn, or avoid another player? Practise running at different speeds and stopping suddenly. See how far the ball shoots off when you stop from top speed? Think how useful that will be in the middle of 'battle'. Keeping your speed down means more control over the ball, although you'll need to sharpen your reflexes as it's much easier to be tackled at low speeds.

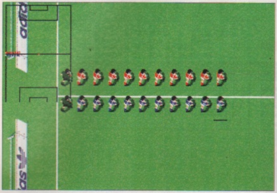
Examine each player and work out what their strengths and weaknesses are. If a player is particularly adept at shooting, then try to use him as often as possible when in the goal box. If a player is awful at passing, then run with the ball and pass to the nearest player as soon as possible.

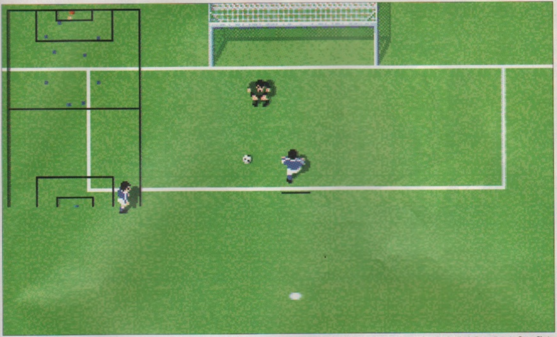
WATER SLIDES

Beware of sliding unnecessarily. Most players will stab at the fire button like maniacs whenever the ball is anywhere near one of their players. Doing this will leave you with nothing but half your team lying on the ground – if you're lucky. If not, a foul will happen and players will be removed from the pitch. Seems like a stiff penalty for a little careless play.

Learn to play defensively. It might seem like a wimp's way out, but there is little to be gained by playing Wimbledon-style and hefting the ball three quarters of the way up the pitch, only to have it intercepted

Unfortunately, Dino didn't build in a 'nobble the opposing team while they're running out of the tunnel' option. Of course, it's fun trying!





If you make it to the nine-yard box without the Goalie scooping the ball up, attempt a Super Shot. You don't really have to bother aiming it so long as your player has a decent shooting ability.

by the opposition. Dino has created an easy passing system so pass the ball upfield rather than run with it.

You don't always need to shoot the ball to pass. One easy technique is to run towards a player and wait until they are about a third of the screen away from you. Now stop dead and the ball will roll towards them. Control will switch to the new player, so be ready to pick up the ball, and away you go!

If you have trapped the ball and are waiting to pass, check the scanner for opposing players coming in for the tackle. If it looks like you aren't going to be able to pass without being intercepted, turn your back on the player marking you – this means they can't tackle you. However, move and pass as quickly as possible, as after a while the computer players get a bit fed up trying to run around you and decide to run through you, and there's no guarantee that the referee will see the obvious foul.

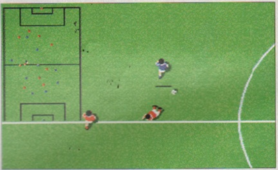
READY, AIM...

When shooting at goal, try to get within the nine-yard box. There's every likelihood that the keeper will just walk out and take the ball from you, but should you happen to have a spare tenth of a second, you might just get in a Super Shot. This is a shot calculated by the computer to beat the keeper, with direction and height figured out for you. It's only really worth trying this if you are controlling a player with a good shooting ability.

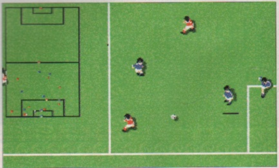
Learn how to do overhead kicks. Headers are tricky things, as your own direction and speed can greatly affect the direction the ball travels in after contact, but overhead kicks are a smart way of suddenly turning the tables on the opposition.

For those of you who have the reflexes and foresight required, after-touch control is a godsend. For those who don't, sit down and spend a few hours practising curving the ball to the left and the right. Once you have it off pat, you'll be surprised at how many more balls start hitting the back of the net. In the case of a corner, for example, shooting across the front of the goal, and then 'steering' the ball under the crossbar is a sure fire way of scoring. So is running up just on the inside of the outer edges of the goalposts and shooting forward. The keeper will dive toward the ball and you can steer it toward the centre of the goal. It will either fly past him, earning you some serious kudos, or will bounce off his legs giving you ample time to follow through and walk the ball into the net.

All these hints should help you become a better Goal! player. If they don't, then there really isn't any hope for you, is there?



Keeping your back to the opposition will only prevent a tackle for a short period. The computer soon becomes bored with trying to run around you and will attempt a foul!



Remember – the scanner is there for a reason. Use it to track in coming players so that you'll be ready when they try to tackle.

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THE TROLLS HEAD

Perhaps the howl that you hear outside in the twilight is not the cry of an amorous hound. Perhaps that moan in the chimney is not the swirl of the breeze. Perhaps the night creatures really are closing in on you. Perhaps it's time you got the hell out of it, and made a run for the Troll's Head Inn!

SHRINE OF KNOWLEDGE

Draw near and ask your question. Don't be embarrassed, even the most noble adventurer is sometimes stuck for a clue. Behind the velvet curtain is the Shrine of all Knowledge where the deepest secrets are revealed and hearts are laid bare.

LURE OF THE TEMPTRESS

Although the whole world has finished this game, Jason Perry is still in trouble – you just can't help some people. He has made it through the caves and now stands before the mighty dragon. One wrong move from him and it's barbecue time again.

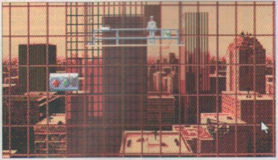
The Shrine replies: Despite what that liar St. George told everyone, you can take it from me that fighting dragons is a no-no. Your only hope is to use a magic potion on it. Your companion is not just a pretty face, why didn't you get her to whip up something in her shop for this eventuality before you set out? No doubt she won't have all the ingredients she needs, but you can find Cowbane in the little garden just outside the Smithy.

Skorls and dragons provide headaches galore for the players of the *Lure of the Temptress.* Most players have already mopped up this game, but the stragglers are still in there fighting.

FUTURE WARS

Future Wars is another game which seems to be enjoying a revival of interest. Is there someone out there selling off games which have gone past their sell-by date? Michael Watson of Coventry is inside the Crughon space-ship weighed down with a pendant, pill, garment, magnetic card, lance, key, documents and an airgun. He has sneakily slipped the garment over the security video camera to hide his next cunning move, but unfortunately he doesn't know what that should be.

The Shrine replies: The next bit of the game requires you to have the speed of a mouse. And your mouse needs the speed of lightning. Once you have placed your garment over the camera, get into the case (using the mouse). Operate the case and then save your game. Now we come to the tricky part. You are going to use the pill, which makes you invisible for a 'very' short time, and in that time you must get to a peint outside the ship where you are hidden by crates. Move to the door and use the pill. Avoid the aliens and exit the door. Move south then west to get yourself behind the cases. This manoeuvre takes a bit of practise, but that's all there is to it.



Life as a window cleaner can be pretty dull. For our hero though things are about to start looking up. A trip in a spaceship and some hair raising adventures are not too far away.

RULES OF THE INN.

• As of today, the Troll's Head Inn has been declared a Nuclear-Free Zone. Anyone caught exploding nuclear devices in the bar will be asked to leave. THIS MEANS YOU!

• Please don't ask for credit as a broadsword between the eyes often offends.

By Order of The Innkeeper.

POLICE QUEST 3

I have always thought of Norway as being a land of prize-winning fjords, beautiful blonde girls, and probably the best lager in the world. Yet Oystein Kristiansen ignores all of this and spends his time grubbing around in the shady world of crime and drugs. Stuck somewhere in the sixth day of *Police Quest 3* from Sierra, our amateur cop has been to 500 West Peach, found the photograph and hair, driven to Oak Tree Mall and given the photo to the U.S. Army. He then spent time snooping in the Station Locker Room where he discovered cocaine in Morales' locker and subsequently snitched on her to the Captain. But now what?

The Shrine replies: The locations to be visited on Day 6 are: Police Station – Flood the toilet using the paper roll. Find the cocaine and report to the Captain. Take car to Coroners. Coroners – Search cabinets and read labels until the coroner comes and speaks to you. Take envelope from desk. Hospital – Give Marie locket from envelope. Burning House – Take scraper and bag from car boot. Talk to Fire Chief then enter house. Pick up photo and examine. Get address on the porch. Get blood/hair sample from floor. Oak Tree – Show I.D. and give photo to army officer. Take file and return to police station. Psychologist's Office – Hand over file then leave. Crack House – Knock on door, then drive to Courthouse. Courthouse – Show judge photo of Bains and news clipping. Pick up warrant and return to Crack House. Crack House – Knock again, then return to Police Station. Police Station – Book in all your evidence then drive to Courtroom. Courtroom – Speak again to the judge and she will give permission to use a ram to open the door of the Crack House. Drive to Crack House and the ram will be waiting for you.

»

HEROES WANTED BOARD!

KINGMAKER

Have you ever had the feeling that while you lay gurgling in your cradle, the fairies swapped you with someone else? Of course this means that somewhere out there is a feeble-minded incompetent who is going to inherit the kingdom, while you are stuck here in this god-awful existence. Have you ever taken a close look at Charlie and thought, 'Blimey I could have done a better job than him. I would have hung on to Diana for a start!' U.S. Gold cannot unfortunately re-write the past, but this Autumn they will give you the chance to prove that it all could have been so different. *Kingmaker* is a user-friendly strategy game that will put you in a position of power during the War of the Roses. England is in turmoil, murder and treachery abound, and in the corridors of power cunning politicians are split over whom they should support as the next King. It is your task to select a Pretender to the throne and guide your pawn through the vicissitudes (that's big troubles to you dude!) of the Middle Ages. Wars and pestilence are two of the problems you must survive in this board-game conversion, before your man becomes the undisputed King of England. I can hardly wait. 'A mouse! A mouse! My kingdom for a mouse!'

» OPERATION STEALTH

A bundle of scrolls have arrived, all of them pleading for help with *Operation Stealth*. In Huntingdon, Donald Campbell has stopped thundering around the lakes trying to break waterspeed records for a moment, and is instead trying to get that electrified door open.

Meanwhile Adman Sheriff from Woolwich is currently being lowered in a cage into a tank of piranhas who are wearing napkins and banging spoons on their dinner plates. And finally, Stephen Planson from Peterborough has almost reached the end of the game, but instead of drifting happily into the sunset he gets a bomb dropped on his head from Doctor Why's helicopter.

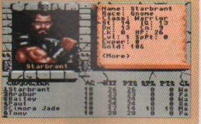
A stealth bomber, invisible to radar, is the target of international espionage and glamourous spies. This game has had more than its fair share of the Shrine's attention this month.

The Shrine replies: As I recall you were all given an armoury of gadgets which can be used to escape from these dreadful fates, what did you do with them? The electrified door needs authorised fingerprints to open it, so take the glass from the sink in the guardroom. Fill the glass with water and give it to the officer who asks for it. In the officer's room you can operate the glass on him to get his fingerprints. While he drinks, you can steal the stamp. Back in the Guardroom you can use the stamp on the inkpad (found between the chair and the mess on the desk) and then stamp the orders sheet. Operate the cigarette case, examine the blue cigarette, then operate it. Use the paper on the glass and Bingo! you'll have some fingerprints. The pen is just the thing you need to operate on the lock which is keeping you in the cage. Once the door is open you can use the watch to tell you that it's time you got the hell out of there, so use it on both sides of the screen to attach a wire. Quickly you can move along the cable to the right and operate the grille. The answer to the 'bomb on the bonce' problem is equally simple. During the underwater sequence you will have spent some time dodging around lumps of seaweed while avoiding sharks. In one of those seaweed clumps someone has dropped their knicker elastic (probably had the pants scared off them), and this can be picked up for later use. Before your final death-defying leap from the helicopter you can use the elastic band to secure the bomb release mechanism ensuring no-one can spoil your final cruise into the sunset.

BARDS' TALE II

Ian Lea from Merseyside has written to ask if I would use my sage counsel to good effect with the Shrine of Knowledge, and bring him some small relief in his quest. I think he means, 'HELP!' Before venturing into Oscon's Fortress he was forewarned by a sage that he must first acquire an item of Kazdek in the wilderness between Thessalonica and Colosse. Well, our friend did find a hut, inside of which was a stone man, but somehow this weird creature falls into a deep asleep that even the kisses of our noble reader fails to overcome.

The Shrine replies: Simply speak the name KAZDEK and the stone man will rouse himself and present you with an item which will come in useful. Make your way to Oscon's Fortress and move four steps forward. From here on keep turning right using your SESI or SOSI to detect a 'something special' message. When this happens take a step backwards and cast PHDO on the right hand wall. You will see a room, and you should be able to work out where the door is. Here you will be asked three questions – the answers are: Fire, Krill and Silence.


```
Name: Starbrant
Race: Gnome
Class: Warrior
St: 14  IQ: 13
Dx: 13  Cn: 9
Lk: 8   HP: 26
Lvl: 1  SpPt: 0
Exper: 0
Gold: 106

(More)

CHARACTER       AC  HIT PTS  SPL PTS  CL
1Starbrant      10   26  26    0   0  Wa
2Arabur         10   23  23    0   0  Pa
3Bailey         10   24  24    0   0  Wa
4Paul           10   24  24    0   0  Ba
5Cimora Jade    10   17  14   18  18  Ma
6Tony           10   28  28    0   0  Pa
```

The Bards' Tale trilogy continues to disturb the sleep of our readers. This hero looks strong, but it needs someone wise in the head to solve some of this game's puzzles.

WRITE IN!

If you have a problem, a notice for the Board, or perhaps you have a piece of scandal which you wish to whisper in the Inn, write to Tony Gill at: The Troll's Head Inn, CU Amiga, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

KGB

Stuart Mawer from B.F.P.O. 17 in Germany has written to say that he is, 'in the club' and what should he do about it? Now we are all very politically correct here at the Troll's Head Inn so we won't be making any sexist remarks. (Although that doesn't mean to say we won't be thinking them!) Before you all rush off to inform The Sun that one of her Majesty's soldiers has got himself in trouble, we should explain that Stuart is referring to the club in the game *KGB* from Virgin. (Now that sounds even more unlikely.)

The Shrine replies: When in the bar you must not mention Hollywood or Buyer 2 to the gangster called Romeo. Talk to Yuri the barman and he'll tell you that the club is upstairs, but first you should talk to the people in the apartment block. Go around the corner to the side-street and enter the block. Use the matches to see your way. Take the clipboard and return to the street. Read the sign that directs you to the caretaker's apartment. Tell the occupant that you are carrying out a poll. Once you're inside admit that you are looking for gangsters. Don't mention the KGB, or detectives. Zhanna will send you to Belussov. Tell him about Lefortovo prison and you'll soon be sent to Ryumin in apartment four. Mention Wrangel Island at this point and you'll find out about Sytenko and apartment six. You won't be able to get in there so you should enter the club from the landing of the upstairs apartments. (Leave the clipboard outside and use the money from the drawer in Uncle Vanya's bedroom to get in). Wait till the punk visits and leaves the toilet before you nip in and take the drugs from the trash. Get rid of the drugs down the toilet. Talk to the guy named Video. Buy what he's selling to get some information. Once you are taken outside by the two heavies make sure you overcome Lyonka and take the lock-pick from his clothes. You can now open the Meat shop by the side door.

DUNGEON QUEST

When they bought their Amiga, many new owners found that their wonder machine came with a game called *Dungeon Quest*. Peter Hopkins from Portsmouth must be one of the few who managed to battle his way to the final problem of this weird game before succumbing to its illogical puzzles. 'In the far corner of the garden a seated figure beckons.' That's what the game says, now what?

The Shrine replies: The final part of the game requires you to – look person, look person, look person, ask person, reset computer. Not very smart is it? Never mind, at least you can throw the game away now and get some well-deserved peace.

DUNGEON MASTER

Having fought his way through every level of *Dungeon Master*, Edmund Ward from Solihull has finally united the Power Gem and the Fire staff into one mighty weapon. Now what?

The Shrine replies: Well how about using this weapon to knock lumps out of Lord Chaos? Unfortunately you won't be able to injure him with fireballs and the like, instead you must create a magical cage using the staff and then fuse it shut. Lord Chaos will take offense to your unkindly behaviour and he won't stand still for it. In this case you can use solid rock walls (Note, they must be two thicknesses to be of use) to form part of the cage. I suggest you move to the levels where the two-headed demons and the fire monsters live and lure the Grey Lord into the little room with the two doors in it. This room will cut down his ability to move around and make it easier to cage him.

As the magical glow from the Shrine fades and dies, these final words of advice are heard faintly, 'When you've got your back to the wall, and it seems that things can't get any worse, just remember – that wall could fall on you.'

In the depths of the Dungeon Master hallways, a firemonster claims another victim. It would appear that once you have discovered the ultimate weapon your problems are still not ended. Luckily the Shrine has the answer to that one as well.

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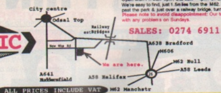

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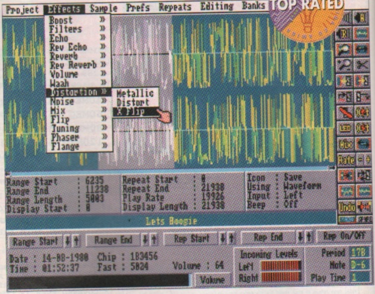
SUPERSOUND 4.12

TOP RATED



Project
Effects
Sample
Prefs
Repeats
Editing
Banks
Boost
Filters
Echo
Rev Echo
Reverb
Rev Reverb
Volume
Waah
Distortion
Noise
Mix
Flip
Tuning
Phaser
Flange
Metallic
Distort
X Flip
Range Start
Range End
Rep Start
Rep End
Rep On/Off
Volume
Incoming Levels
Undo
Rate

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Range Start    : 6235    Repeat Start   : 0        Icon  : Save
Range End      : 11238   Repeat End     : 21938    Using : Waveform
Range Length   : 5003    Play Rate      : 19926    Input : Left
Display Start  : 0       Display Length : 21938    Beep  : Off
                          Lets Boogie
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Time : 01:52:37    Fast : 5824   Volume : 64   Right     Note       D-6
                                                        Play Time  1
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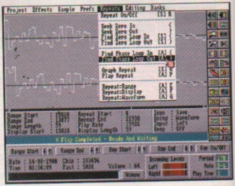
Can you believe it? Priced at just £4, *Supersound 4.12* is one of the most advanced sample editors available, easily surpassing the standards of any budget sampler.

As you may have read in the June '93 CU AMIGA, *Supersound* is a generic sample editor. In other words, you can use it to sample and edit sounds in conjunction with just about any sampler cartridge. Although at first it might look rather ordinary, *Supersound* has a whole bunch of tricks hidden up its sleeves.

Top of the bill are the effects. In addition to the filters, reverbs and distortion routines of v3.2, the new release offers yet more new and original effects, along with more control over the existing ones. Some of the best include the X-flip distortion option, which reverses alternate sections of the sample data – good for adding a bit of grit to a bassline, for example.



Project
Effects
Sample
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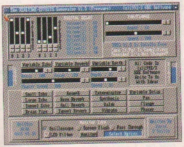
Repeats
Editing
Banks
Repeat On/Off [S] R
Seek Zero In {
Seek Zero Out }
Find Zero Loop In [S] {
Find Zero Loop Out [S] }
Find Phase Loop In [A] <
Find Phase Loop Out [A] >
Graph Repeat [S] G
Play Repeat [A] P
Repeat=Range [A] E
Repeat=Display [A] F
Repeat=Waveform [A] G
Range Start
Range End
Rep Start
Rep End
Rep On/Off
Volume

X Flip Completed - Ready And Waiting

There are separate treble, bass and brightness boosters, all of which are adjustable, three types of noise filters, and a cunning crossfade mixer. The crossfader is best used on instrument sounds that never settle down to a steady loop. By mixing a reversed copy of the sample back onto itself, you're assured a smooth loop. As well as the usual 'zero seek' method employed by the competition, there's an alternative 'phase loop' option, which analyses the start and end of the wave for a good match. A spare buffer is reserved for a second sample, which works just like the spare screen in *DPaint*.



The excellent real time effects program, TREG, is also included. Still at version 1.5, it offers a stack of quality real time effects, including delays, phasers, distortion and pitch-shifters.

Supersound is no longer licenceware, even though it's still dirt cheap. If you want proper instructions, there's a well-produced manual available for £10. If you buy the software and manual together, it'll only cost you £11. Now that's what I call a bargain!

Available from: KBE Software, 12 Salters Close, Warrington, Stoke on Trent, Staffordshire ST9 0DB. Price: £4

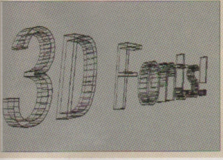
93%

POWERFONTS

In theory, turning scalable fonts into 3D objects should be a breeze – after all, they're made up of vectors and points just like 3D objects, even if they are missing a third dimension. Unfortunately, reality is often a lot harder than theory. It would be great if there was a package that handled all the fiddly little calculations for you. Now there is – *Powerfonts*.

It uses the AGFA Compugraphic Font standard, so you'll need Kickstart 2.04 or higher. A hard drive and an accelerator are also recommended. You'll also need 2Mb of RAM.

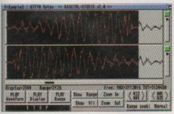
Turning a compugraphic font to a 3D one is simple – select your font from the file requestor, enter your text from the keyboard, and then click on the 'Show 3D' button. As if by magic, you now have a 3D font. After you've spun it around, scaled it, and generally admired it, you can save it out as either a *Real 3D* or *Videoscape 3D* object. Support for *Reflections 2.0*, *Imagine*, *Sculpt 3D*, *DXF AutoCAD*, *Caligary 3D*, *Lightwave 3D* and *3D Professional* should appear in future revisions.

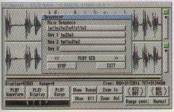


Available from: RGB Software, Postbus 12028, 3501 AA Utrecht, Netherlands. Price (and UK distributor): TBA.

80%

HOME MUSIC KIT


DIGITAL-STUDIO v2.0
PLAY Waveform
PLAY Display
PLAY Range
Show Range
Zoom In
Show All
Zoom Out
STOP
Range seek: Normal


Sequencer
Main Sequence
Seq 1
Seq 2
Seq 3
PLAY SEQ
STOP
EXIT
PLAY Waveform
PLAY Display
PLAY Range
Show Range
Zoom In
Show All
Zoom Out
STOP
Range seek: Normal

Home Music Kit
Home Music Kit

Based around the same components as GVP's DSS 8 sampler, the Home Music Kit is a new contender in the crowded 8-bit sampler market.

As usual, it comes as a software and hardware combination. The cartridge is par for the course, just about as good as any sub-£50 stereo sampler you could think of.

The software is *Digital Studio III*. It runs in a Workbench 2-style environment on any Amiga, but it's extremely slow at times, especially the mouse response and requestors. That aside, the program is up to scratch elsewhere. There's a software high frequency filter that takes out noise before the sound is sampled. Software input level sliders allow you to adjust the gain, and switch between MIC and LINE level inputs. A few basic effects are included, but nothing that's going to set the world alight.

In addition to the main program, there's *Real Time Sound Processor II*, which imitates an effects box. There are 34 variable effects to choose from, including a compressor, stereo AM modulator, phaser, stereo splitter, pitch shifter and flanger. This is the saving grace of an otherwise unremarkable package.

As there are plenty of alternative sample editors around, and most trackers now have built-in sampler sections, it shouldn't be much of a problem if you don't get on with the software.

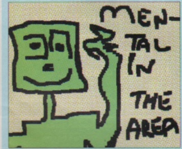
Available from: Power Computing, Unit 8 Railton Road, Woburn Road Industrial Estate, Kempston, Bedford MK42 7PN. Tel: 0234 843388. Price: £49.95.

79%

BOREALIS JUNIOR

Deluxe Paint is fine for serious artists, but it can be a bit fiddly for little kids who just want to make a mess. All those tiny icons down the side of the screen weren't designed for cack-handed four-year-olds, but *Borealis Junior* is.

There are no menus here. Everything is controlled from a screen of big coloured icons. Drawing modes, colours and brushes are selected from the icons, then the right mouse button swaps to the painting screen. It's about as simple as it could possibly be – even the Ed got the hang of it after a while [*You're fired – Ed*.]. All the basic drawing functions are there – various brushes, colour cycling, line drawing, text entry, pattern fills and so on. Included on the disk are a few black and white outline pictures – the idea is that you load them up and colour them in yourself.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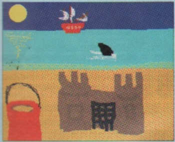
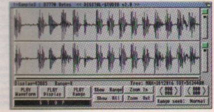


Considering this will only set you back four quid, and it could keep the kids off your back for hours on end, I'd say it would be money well spent!

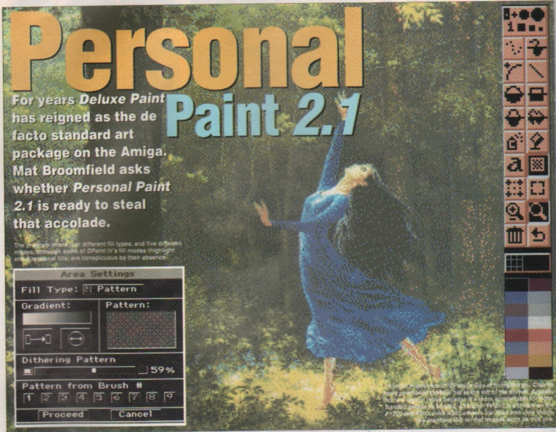
Available from: Valley PD, PO Box 15, Peterlee, Co. Durham. Tel: 091 587 1195. Price: £4.00 (including P&P).

80%


DIGITAL-STUDIO v2.0
PLAY Waveform
PLAY Display
PLAY Range
Show Range
Zoom In
Show All
Zoom Out
STOP
Range seek: Normal

Personal Paint 2.1

For years *Deluxe Paint* has reigned as the de facto standard art package on the Amiga. Mat Broomfield asks whether *Personal Paint 2.1* is ready to steal that accolade.



The program offers four different fill types, and five different modes, although some of *DPaint IV's* fill modes (highlight and directional fills) are conspicuous by their absence.

Almost in defiance of DPaint's way of doing things, Cloanto have positioned the tool bar at the left of the screen. Actually this is a logical move because it's more comfortable for right-handed people to use. Although PPaint is a dream on the A1200 and A4000, even A500 owners can load and view industry standard GIF format images such as this one.

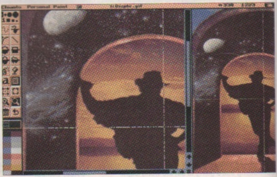
Before I even start to describe *Personal Paint's* features, it's important to understand what the program is about – yes it's about drawing on your Amiga, but what particular area of drawing is it most effective in?

Over the years *Deluxe Paint* (*DPaint*) has become more and more an animators tool, with its onion skin feature and brush morphing, to say nothing of the animation menus. *Personal Paint* (*PPaint*) on the other hand, clearly shuns the area of animation as it has absolutely no provision for animation at all. What it does have, however, are a large number of tools dedicated to image processing and these are supported by import and export modules which allow you to convert from and to several other graphic save formats (such as GIF and PCX).

So, having established the program's raison d'etre, let's take a closer look at its features. *PPaint* is supplied on two disks and can be run from floppy or hard drive on any Amiga with at least 1Mb of memory. Strangely enough, no HAM screen modes are supported, but on the A1200 and A4000 you can use the new 256 colour screen modes in resolutions up to 1472 by 283 pixels. Now, the purists are doubtless going to scream about the lack of HAM support but, to be honest, how often do you use it? HAM is slow to edit and unpredictable to use, so perhaps the omission is not so bad, especially if you own one of the AGA machines.

NO DPAINT CLONE

In a definite bid to distance itself from *DPaint*, the program's main screen is quite different in appearance to that of its rival. For starters the tool bar is normally at the left of the screen rather than the right, but more significant is the choice of tools available. Naturally many of the basics are identical, after all it wouldn't be a paint package if it didn't have line, circle and freehand tools! However, even these work in different ways to their *DPaint* counterparts. In default mode, they will simply work as usual, drawing their appropriate shape using the current pen or brush, however each tool also has the option to use the first row of any brush as a stylus, so you could, for example, define a complicated pattern of dots or dashes and use that. I suspect that this mode is going to be most useful when drawing construction lines, that is lines which (in this case) will extend



Personal Paint offers a great magnify mode whereby you can simply draw a box around the area to be magnified and the selected area will be displayed at maximum magnification.

OUTLINES

PPaint offers four different ways of outlining a brush. The first, Simple, merely creates a one pixel border in the current ink colour. This border hugs the shape being outlined exactly. Square does the same as Simple, but squares off the edges of the brush. Shadow does the same as Simple but doubles the thickness of the line on the lower and right edges of the object. 3D is the most useful for it uses the ink colour to outline the lower and right edges of the brush and the paper colour for its upper and left edges. With the correct colours this can be used to create a raised up or recessed appearance.

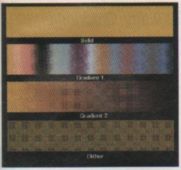
from an existing object across the screen so that you can draw further parts of the same object in the same perspective and to the same scale.

There are also a number of completely new tools. One of my favourites is the Bezier curve tool which makes the creation of smooth complex curves an absolute doddle. Simply define a start and end point for your curve and a line will be drawn between them. Attached to the line are two 'handles' which can be used to stretch it in whichever direction they are moved.

FILL INS

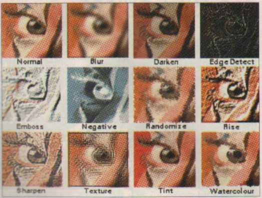
Another new option is to be found hidden in the fill requestor. When it comes to defining the way that an object will be filled, there are three options: solid, pattern or gradient. Of course, solid simply fills the selected area with a block of solid colour, but the other two options are new and are very useful indeed. Pattern will fill the object with a user-selectable dither pattern. This pattern can be used to 'tint' the area being filled by between two and 98 percent. At two percent, a dot of the ink colour is placed every 10 pixels for example, whilst at 50 percent every other pixel will be the ink colour. The other new option is gradient, which is similar to *DPaint's* dither fill option. It has two ways of working, both of which are dependent upon the current ink and paper colours. The first mode simply fills the specified area with a dithered pattern that graduates from the ink colour to that of the paper. Every colour in the palette between the two will be included in the fill. If you have a well ordered palette, this mode is very useful, but it tends to fall down if, as sometimes happens, your palette is less well organised and colour ranges aren't neatly and sequentially defined.

The program has a useful new gradient fill mode that makes the best use of a limited palette. The option is particularly effective when used in high resolution.



The other new fill option attempts to overcome this in a very clever way, which is ideal if you are working with a very limited palette. Again it uses the current ink and paper colours as its boundaries, but this time rather than using lots of different colours to produce a transition from one colour to the other, it simply uses the two chosen colours and a selection of ordered dither patterns to produce the graduation.

Some of *Personal Paint's* more interesting Filter effects.



NEW PROCESSES

Probably the most important new features that *PPaint* offers, can be found in its Filter tool menu. When this is selected a long list of image processing options appear ranging from Blur High to Water-Colour Oblique. These options can be used to greatly alter the appearance of all or part of a picture. To use them, simply select the required option and define the area over which the process is to be applied. Unfortunately, this area can only be rectangular, but it's certainly better than nothing.

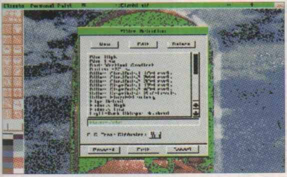
Some of the more interesting options are Blur (which does just that), Randomise (which jiggles the pixels around to make your image look as if it was produced with coarse grain film), Texture (which adds a user-definable texture to your image) and Water Colour (which softens all the colour borders in an image).

Better yet, the Filter selection menu also lets you create your own filters, although this is certainly not an operation for the beginner to attempt!

NOT ALL PERFECT

Unfortunately, *Personal Paint* is not all sweetness and light, and one area that caused me particular annoyance is the arrangement of the palette in 256 colour mode. Now, if you select Edit Stencil all 256 colours of the palette are displayed at once in nice orderly rows and columns with easy to edit boxes. If you select Palette (which is the section where you actually create and edit the palette) you get a stupid requestor that contains tiny little colour boxes and, worse still, you can only see 28 colours at a time any way. Admittedly, the Palette requestor does contain far more tools than the Stencil requestor, but would it really have hurt to make the requestor larger? Considering the importance of this section, I think that Cloanto could definitely have done a better job in its design.

On a cheery note again, one feature that I absolutely love, is *PPaint's* variable magnify mode. No I don't mean that the magnification level can simply be increased or decreased, although it supports that too. What I'm talking about is the fact that when using the variable tool, you can draw a box around the items you want magnified and the program will magnify them at the highest level that will display the selected area.



The filter requestor is where you'll find all of the image processing options.

CONCLUSION

I very much liked *Personal Paint*, and I think that I will be using it in preference to *Deluxe Paint* whenever possible. Its lack of HAM and animation support are not problems most of the time, but if you can only afford one art package then *Deluxe Paint* is more versatile. I feel that *Personal Paint* is more user-friendly than its rival, although it's hard to define exactly why. Perhaps it's because the options seem more logical to me.

Some of the program's operations are ridiculously slow, even on the '020 based A1200, and I could have been forgiven for thinking I was working in HAM mode instead of 256 colour mode. *DPaint* isn't quite that slow.

Its image processing features are very powerful, and if used by an experienced artist or photographer, will save many hours of work and produce some very original results.

At only £59.95 it's 40 pounds cheaper than *DPaint IV*, and represents very good value. I strongly rĕcommend *Personal Paint* to anyone who can afford it. It won't completely replace *DPaint*, but they are ideal companions to each other. CU

MICROPACE £59.95

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A1500 ☑ A2000 ☑ A3000 ☑ A4000 ☑

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EASE OF USE ◆◆◆◆◆◆◆◆◆◇ 95%
Even easier than D-Paint.
VALUE FOR MONEY ◆◆◆◆◆◆◆◆◇◇ 85%
Very cheap – relatively!
EFFECTIVENESS ◆◆◆◆◆◆◆◆◇◇ 85%
Works very well.
FLEXIBILITY ◆◆◆◆◆◆◆◇◇◇ 70%
No HAM and no animation.
INNOVATION ◆◆◆◆◆◆◇◇◇◇ 60%
Nothing new, but everything's done well.

> *Good value. The ideal companion to DPaint.*

OVERALL 84%

AMOS Pro Compiler

Europress' new AMOS Pro Compiler promises to transform your AMOS creations into lean, mean machine code. Dave Smithson puts it to the test.

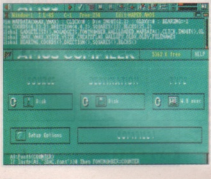
Bundled with the Compiler are a number of example programs including *Galax*, a vertical scrolling shoot 'em up, that demonstrate the speed increases obtainable.

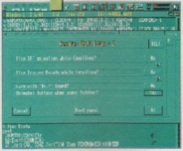
It's been over eight months since Europress launched AMOS Professional, the latest and, most certainly, the greatest incarnation of AMOS yet. Boasting a plethora of new commands (over 200 of them!) and more knobs and whistles than a fairground organ, AMOS Professional has redefined the standards in Amiga programming languages. For programmers wanting to turbo-charge their creations, Europress have now launched a companion product to AMOS Pro in the shape of the new AMOS Pro Compiler, a utility that promises to transform your AMOS creations into lightning fast machine code. What's more, compiled AMOS programs run completely separate from the AMOS Pro interpreter, so the doors have now been thrown open for AMOS programmers everywhere wanting to distribute and even market their creations.

TOTAL COVER

Even if you don't own AMOS Professional, the new Compiler will be of interest to all AMOS programmers. Although AMOS Professional users will reap the most rewards, the new Compiler will more than happily chomp its way through code produced by anything from AMOS 1.35, Easy AMOS and even a standard ASCII text editor, allowing you to use your favourite text editor (*TurboText*, for example) in preference to the standard AMOS Editor should you feel the need. The Compiler automatically tokenises' ASCII source files as they are compiled, so it's actually quite possible to develop AMOS programs without ever loading the AMOS Editor. Obviously you'll still need the Editor in order to run AMOS accessories such as the Sample Bank Maker and Object Editor but even these could be compiled, too.

The AMOS Pro Compiler runs from within the AMOS Pro Editor, allowing you to edit and compile without leaving the editor.





Configuring the Pro Compiler to suit your own particular needs is simply a matter of clicking on icons.

Installing the Compiler depends entirely upon the version of AMOS that you own. If you're lucky enough to own AMOS Pro, then the Compiler can be installed as an accessory program that can be run from within the AMOS Pro Editor. Before you can do this, however, you need to update your AMOS Pro programs disks to the latest version using the updater disk bundled with the Compiler. A lot of speculation has been floating around claiming that this new update offers support for the AGA chip set, but I'm afraid that this isn't true – Europress claim that an AGA version of AMOS Pro is in the pipeline, but you won't find it in the AMOS Pro Compiler box!

INSTALL AND COMPILE

Once installed, the Compiler is instantly available whenever you run AMOS Pro. It can be brought into action in one of two ways, depending upon how you wish to use it. If you wish to compile an AMOS program to anything other than an AMOS executable (compiled programs that can only be run from within the AMOS Pro Editor), then all you have to do is to select 'Compiler Shell' from AMOS Pro's 'User' menu and – after a few seconds disk access – the Compiler Shell accessory springs to life. From here you can choose to compile an AMOS program on disk or even the program you are currently editing to one of three different formats – an AMOS executable, a CLI program or a Workbench program. Alternatively, a program loaded into AMOS Pro can be directly compiled into an AMOS executable simply by hitting a hot key combination.

The overall speed of compiled programs is certainly an improvement over the original AMOS Compiler and they're many times faster than interpreted AMOS code. The increase in code performance depends entirely upon the type of program you're compiling – if your program performs a lot of maths-intensive operations, then considerable improvements are impossible. Some aspects of AMOS (bobs and icons, for example) aren't affected that much, but even then these can be speeded up if the code that controls them is processor intensive. The size of compiled code is much smaller than the original AMOS Compiler, particularly if you compile your code so that it uses a shared library called 'AMOS.library' that contains all the AMOS routines.

Europress bundle a number of example programs that demonstrate the speed increases obtainable from the Compiler. Amongst these is *Galax*, an excellent *Hybris*-like shoot 'em up that – whilst playable when run from within the AMOS Editor – is totally transformed by compilation.

JARGON BUSTERS

- **Compiler – A programming tool which turns source code into a standalone executable program.**
- **Bob – A blitter object, a form of sprite used extensively by AMOS programs.**

CONCLUSION

The Compiler certainly isn't perfect but, apart from the odd hiccup, it's a solid piece of software. Add to this the level of integration that is offered when running the compiler under AMOS Pro and you've got a utility that more than lives up to its 'professional' title. Even if you already own the old Compiler, I advise you to buy a copy of this new one simply because of the speed increases and the smaller object code that it produces. For all AMOS coders, the AMOS Pro Compiler is a recommended purchase.

EUROPRESS SOFTWARE £34.99

A500 ☑ A500+ ☑ A600 ☑ A1200 ☑
A1500 ☑ A2000 ☑ A3000 ☑ A4000 ☑

**Europress Software, Europa House,
Adlington Park, Macclesfield SK10 4NP.
Tel: 0625 859333**

EASE OF USE ◆◆◆◆◆◆◆◆◇◇ 88%
If you can point and click on icons, then you can use the AMOS Pro Compiler.

VALUE FOR MONEY ◆◆◆◆◆◆◆◇◇◇ 75%
This should have been bundled with AMOS Professional but even with this minor quibble, the compiler is good value for money.

EFFECTIVENESS ◆◆◆◆◆◆◆◆◇◇ 86%
Compiled code is both fast and very compact.

FLEXIBILITY ◆◆◆◆◆◆◆◆◇◇ 82%
The compiler shell gives you a considerable amount of control over the compilation process.

INNOVATION ◆◆◆◆◆◆◆◇◇◇ 75%
Not exactly state of the art stuff, but a must have for all AMOS owners nonetheless.

> ***If you own AMOS, then you'd be a fool to miss out on the AMOS Pro Compiler.***

OVERALL 88%

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Speed MIPS*	7.48	12.1	15	30
Processor	68030EC	68030EC	68030	68040
Maths Co-Pro.	68882 included	68882 included	68882 included	In 68040 processor
Std 32-bit RAM	1Mb	4Mb	4Mb	4Mb
Max 32-bit RAM	13Mb	16Mb	16Mb	64Mb
Extras	SCSI	SCSI	SCSI	SCSI Ser/Par
PRICE	£399 INC VAT UPG 0110	£699 INC VAT UPG 0430	£999 INC VAT UPG 0533	£1299 INC VAT UPG 0740

*MIPS: Millions of instructions / second, a normal Amiga runs at .67 MIPS

PLUG-IN HARD DRIVE & ACCELERATOR
FOR AMIGA 500 AND AMIGA 500PLUS

GOLD
94%
40MHz

The A530 is a unique combination of a hard drive, RAM board and an accelerator. Inside is a full Motorola 68030EC processor running at 40MHz making your Amiga faster than you thought possible. The A530, with a maths co-processor, is up to 300 times faster than a standard A500! The new processor and 32-bit SIMMs is joined by up to 8Mb of 32-bit RAM, which further enhances its performance. Features Include:

- *40MHz 68030EC Processor*
- *Up to 8Mb 32-bit Memory, 1Mb fitted*
- *Cut Off Switch For Game Compatibility*
- *Designer Styling to Match the A500*
- *Dedicated Power Supply and Fan Unlike Many Competitors*
- *Mini-slot for Future Expansions*
- *Factory Installed Hard Disk*
- *High Speed DMA SCSI Controller Can Handle 7 Devices*

A530 HARD DRIVE & 40MHz ACCELERATOR

42Mb	80Mb	120Mb
~~£699~~ £499 INC VAT - HAR 0962	~~£799~~ £599 INC VAT	~~£899~~ £699 INC VAT - HAR 0974

PC EMULATOR
PLUGS INTO THE HD8+ OR A530 TO ALLOW YOU TO RUN PC COMPATIBLE SOFTWARE ON YOUR AMIGA
286-16MHz EMU 0500 £99 INC VAT

PLUG-IN HARD DRIVE
FOR AMIGA 500 AND AMIGA 500PLUS

A hard drive will have an immediate effect on your Amiga. Where you used to constantly swap disks, wait for files and programs to load and sit around waiting for disk accesses, you'll now be pushed to keep up with your Amiga! Hard drives work in the same way as floppy disks, but can hold a great deal more information and access this data much quicker.

The A500-HD8+ provides the ultimate in hard drive performance, it can also increase the memory of your Amiga, and provide PC compatibility. Features include:

- *Ultra Fast Access SCSI HD*
- *Up to 8Mb of FAST RAM*
- *Mini-slot for Future Expansions*
- *Cut Off Switch For Game Compatibility*
- *Designer Styling to Match the A500*
- *Dedicated Power Supply and Fan Unlike Many Competitors*
- *High Speed DMA SCSI Controller - Can Handle 7 Devices*

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FOR A1500/A2000/A3000/A4000

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Impact Vision 24 is a fully featured video card. Unlike other graphics cards which require you to buy extra modules later, IV24 has everything you could want from a video board built-in!

Included with IV24 is GVP's custom Video Interface Unit (VIU). This gives you more choices for in and outputting video signals than any other Amiga peripheral on the market. VIU-CT splitter provides additional RGB, Y, R-Y and B-Y output.

FREE SOFTWARE WITH IV24

Create stunning 3D rendered images, retouch captured images and wipe between 2 video sources with 50 packaged video transitions for production studio effects. Also included is MacroPaint 2, a powerful 24-bit graphics package which can paint in 16.8 million colours.

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A1500/A2000 ADAPTOR - £49.95 - GVA 5224

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FOR ALL AMIGAS

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HARD DRIVE CARD
FOR A1500/A2000/A3000/A4000

The HC8+ hard drive card gives the ultimate in hard drive performance and can be used to increase your Amiga's RAM.

- *High Speed DMA SCSI Controller - Can Handle 7 Devices*
- *Ultra Fast Access*
- *SCSI Hard Drive*
- *Up to 8Mb of FAST RAM*
- *Direct Memory Access Style Design*

0Mb	42Mb	80Mb	120Mb
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SCSI/RAM EXPANSION
FOR THE AMIGA 1200

Adding RAM or a hard drive to your Amiga will have a considerable impact on its speed. The GVP SCSI/RAM allows you to enhance your Amiga with both. Its SCSI hard drive interface is one of the fastest available, whilst its 32-bit RAM upgrade is based on the same technology as that featured in the best selling A1230.

- *Built-in, Full SCSI Hard Drive Interface*
- *Optional 8Mb of 32-bit RAM*
- *Optional 68882 Maths Co-processor*
- *Easy to Fit and Doesn't Void Warranty*

SCSI ADAPTOR KIT - £49 INC VAT - HAR 1240

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FOR ALL AMIGAS WITH 4Mb RAM

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CINEMORPH INCLUDED! SEE DETAILS BELOW

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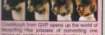
FOR ALL AMIGAS WITH 3Mb RAM



CineMorph from GVP opens up the world of Morphing - the process of converting one image to another to create dazzling special effects. Currently very popular in music videos and feature films, morphing has become the fashionable video effect to use. Now with CineMorph you can create these stunning effects on your Amiga.

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FOR THE AMIGA 1200

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32-bit RAM and a maths co-processor can also be added, enhancing performance still further. The A1230 doesn't void your Amiga warranty, and is also compatible with PCMCIA standard cards, not preventing their use!

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- *68030EC Processor Running at 40MHz*
- *Up to 32Mb of 32-bit RAM*
- *Easy Fitting Trapdoor Expansion - Doesn't Void Your Warranty*
- *Doesn't Disable PCMCIA Interface*
- *Optional 68882 Co-processor - Twice the Speed of a 68881*

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Technosound TURBO II

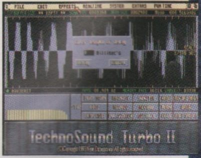
Technosound Turbo finally reaches version 2, giving Tony Horgan yet another excuse to make some noise.

Cheap samplers are everywhere these days. If you want to try your hand at a bit of music, or add some sound effects to a game, as little as £30 will buy you a sampler and the software to go with it. Technosound Turbo has already established itself as the leading budget sampler, and now it's up to version 2.

Instead of replacing the old Technosound with version 2, New Dimensions have released this at the higher price of £49.99, and are continuing to supply Technosound Turbo 1 at its original £39.99 pricing. The idea is that you've now got the choice between an entry level or 'big brother' version.

THE KIT

It's business as usual with the hardware. The sampler cartridge hasn't changed from the original, so you get a widget about the size of a Swan Vesta matchbox, which plugs into the parallel port at the back of the Amiga. A couple of phono sockets let you connect the cartridge to your sound source (record deck, CD player, tape etc.). A stereo mini-jack to stereo phono cable is included, so you can get started straight away.



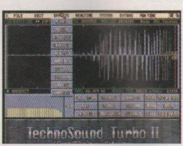
Precise control over the effects can come in very handy. Delays, for example, can be set to run in time with the tempo of the music.

NEW FEATURES

Here's a list of the main updates since TT1.

- Customised user interface with pull-down menus
- Direct to hard disk recording
- Hard disk playback sequencer
- In-built tracker
- MIDI module emulation
- Extra variable effects
- Real time voice changers

TECHNO SOUND
Turbo
© 1991
AMIGA STEREO
Sampling Cartridge
NEW DIMENSIONS



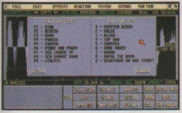
These are the main effects available for processing sampled sounds. Although there's nothing stunning on the menu, they take care of the basics.

THE SOFTWARE

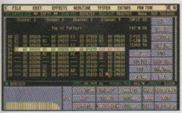
The Technosound software has never been inviting. It's one of those programs that use a customised system of icons and windows, which falls way short of the normal Amiga operating system in terms of speed and flexibility. What's the point? It just makes the program slower and more fiddly to use. TT2 now has pull-down menus, but even they're inferior to the standard Amiga menu system.

Once you've found your way around the main functions (which are clearly documented in the manual), you can get sampling. Setting the sample rate is a rather slapdash process. You need to move a slider, which alters the rate in rather large steps. There's no box to enter a precise value, and you don't get to see the equivalent period rating of the sample rate. This makes sampling instruments rather tricky, and when you go into your tracker, you could find half of your samples are out of tune with the rest.

Setting the right input level is also more trouble than it should be. There's a Monitor button on the main panel, which lets you hear the incoming sound. Normally, you'd have some kind of graphic level meters at this stage, so you could tweak the volume on your source, in order to get a good recording without distortion. The trouble


FILE
EDIT
EFFECTS
REALTIME
SYSTEM
EXTRAS
FUN TIME

Look at all those real time effects! Although there are some good voice changers in there, the sample rate is too low to make the phasers and reverbs worth using with music.


FILE
EDIT
EFFECTS
REALTIME
SYSTEM
EXTRAS
FUN TIME

If you feel the urge to test out some of your recently-grabbed samples, you can skip across to the integrated tracker for a little composition.

is, you only get the oscilloscopes when you enter the record mode, which turns off the sound monitoring until you start sampling, by which time the oscilloscopes have disappeared again.

Once you've started sampling, the software will go on recording until it runs out of memory. Alternatively, you can tell it how long to record – or rather, how much memory to use for the recording. It samples into Fast RAM if you've got it, so even on a 1Mb A500 you can grab some pretty large sounds.

EDITING

One of the better points of TT2 is that it can hold more than one sample in memory. This is handy if you've got a big sample, from which you want to extract three or four smaller samples. It also allows you to use the built-in tracker.

Most of the editing is fairly straightforward. There are all the cut and paste functions you'd expect to find, but only a few effects. There's a delay, echo, phaser and synthesiser, all of which are variable. The echo and delay both affect the sample in memory, but the synthesis affects an incoming sound, then samples the result. The result is a wobbly version of the original sound, caused by sliding the pitch and speed up and down. The only EQ effect is a low-pass filter.

HARD DISK RECORDING

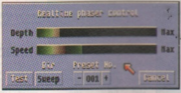
Hard disk recording is used in a lot of big studios for pre-CD mastering. On high-end systems, you can digitally record an entire album on the hard disk, edit all the tracks on screen, EQ them, crossfade them, and then put them straight out to the CD master without any loss of sound quality. TT2's equivalent is rather more modest, but it works. It's still 8-bit sampling, and the rates you can use are low on slower machines, but it could come in handy sometime.

REAL TIME EFFECTS

TT2 has one of the biggest selections of real time effects on any sample editor. On the menu, we've got a phaser, echo, delay, stereo pan, volume ramp, synthesis, pitch up, pitch down, reverb, and loads of other pitch-shifting effects. Unfortunately most of them are none too good. The phaser uses a very low sample rate, resulting in a nasty scratchy noise. The other effects suffer the same fate, although the stranger pitch-shifters get away with it.

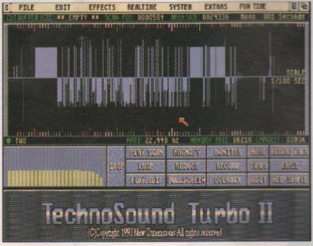
If you want to test out your samples, there's a built-in tracker. It's a very basic version of *Protracker*, and you wouldn't want to use it as your main tracker, but it does come in handy.

One other new feature is the MIDI module mode. This lets you control the Amiga from an external MIDI device, with the Amiga acting as a four-voice sound module. Voices one to three are assigned instrument samples, and the fourth emulates a drum map, with different sounds mapped across the range of the keyboard.


Realtime phaser control
Depth
Max
Speed
Max
Dir
Preset No.
Test
Sweep
-
001
+
Cancel

Variations on the real time effects can be saved with their own 'preset' numbers. You can then recall a particular effect whenever you need it.

The RAM scan feature allows you to hack samples from the computer's memory. This means you can borrow samples from all your favourite music demos.


FILE
EDIT
EFFECTS
REALTIME
SYSTEM
EXTRAS
FUN TIME
CUT BUFFER SIZE: ** EMPTY ** SCAN POS: 0000504 AREA SIZE: 0024336 Mono 001 Seconds
SCALE
1/100 SEC
TWO
RATE: 22,498 hz MEMORY FREE: 0621K LARGEST: 0393K
STOP
PLAY SCAN
MAGNIFY
MONITOR
NAME
RECORD OVER
LOOP
REDUCE
RECORD
TURBO
ERASE
PLAY EDIT
FULLSCREEN
OVERMIX
EDIT
KEEP SAMPLE
TechnoSound Turbo II
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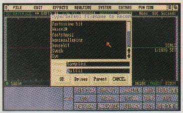
SOUND QUALITY

The most important factor is the quality of the sound, and on that score, it's okay by me. It avoids the hum and hiss that worm their way into some samplers, and the frequency response is on a par with the competition. You're not limited to using the supplied software – the cartridge works with most other sample editors, including *OctaMED*. If you plan to ditch the software though, you may as well go for the original TT, which is a tenner cheaper.


FILE
EDIT
EFFECTS
REALTIME
SYSTEM
EXTRAS
FUN TIME
Samples
OK
Drives
Parent
CANCEL

Hard disk recording used to be limited to high-end samplers, but TT2 now gives everyone the opportunity to use it.

CONCLUSION

There are three basic areas which make or break a sample editor – sound quality, effects, and user-friendliness. Sound quality's no problem, so that leaves the other two.

On the effects front, it's rather disappointing. Even though there are plenty of realtime effects, most of them aren't too hot, and why is there no time-stretch feature? Options for putting effects on samples are also a bit limited. Then there's the user-friendliness. It's not so much a friend of the user, more of a casual acquaintance, pleasant enough in small doses, but you wouldn't want to be stuck in a lift with it. The software is also available separately for £29.99, and TT1 owners can upgrade for £15 plus P+P. CU

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EASE OF USE ◆◆◆◆◆◆◆◆◆◆ 68%
Mostly mouse-operated, but often slow and unconventional.

VALUE FOR MONEY ◆◆◆◆◆◆◆◆◆◆ 79%
Should really have replaced TT1 at the same price.

EFFECTIVENESS ◆◆◆◆◆◆◆◆◆◆ 80%
Good sound quality, but the editing could be better.

FLEXIBILITY ◆◆◆◆◆◆◆◆◆◆ 83%
Hard disk recording, built-in tracker and real time fx extend its possible uses.

INNOVATION ◆◆◆◆◆◆◆◆◆◆ 77%
The hard disk recording is new, but you've seen everything else before.

> *A slightly over-priced budget sampler.*

OVERALL 78%

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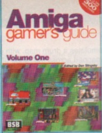
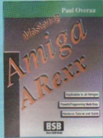


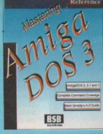
highly illustrated *Amiga Gamer's Guide* contains a wealth of background information for your favourite Amiga games such as Streetfighter 2, Sensible Soccer and Zool. You'll find full solutions, picture by picture walkthroughs, tactics, strategy and cheats. From sports sims to arcade adventures, *Amiga Gamer's Guide* gives you all the hints and tips, hidden screens and puzzle solutions you could ever need. Topped off with the most complete A to Z of tips and tricks to over 300 of the greatest games, it's sure to become your essential guide to *winning* on your Amiga.

Amiga Gamer's Guide
Dan Slingsby, 368 pages, £14.95,
ISBN: 1-873308-16-7



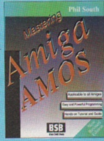
The ARexx programming language is assured a bright future as part of Workbench, with official endorsement from Commodore itself. No harder to learn than BASIC, the examples and listings supplied will teach you ARexx from scratch. A complete understanding of the application control advantages of this powerful language can be yours. Find out how to install ARexx on any Amiga. Work through the tutorials, on both beginners and advanced programming topics. Also applicable to Workbench 1.2 and 1.3 users (we tell you how to get ARexx). *Free* disk of example scripts when ordered from BSB.

Mastering Amiga ARexx
Paul Overaa, 336 pages, £21.95,
ISBN: 1-873308-13-2



complete A to Z guide to over 140 AmigaDOS commands, and is *the* established reference to the Amiga's DOS. Each command is documented through practical examples which introduce ideas for writing script programs. All entries are fully cross-referenced and indexed so the information you need is easily accessed in a jargon free manner. If your machine comes with AmigaDOS2, 2.1 or 3 or you have just upgraded, exploit its power for your everyday computing needs with this essential title!

Mastering AmigaDOS3 Reference
Mark Smiddy, 416 pages, £21.95,
ISBN: 1-873308-18-3



This popular guide to AMOS programming has been fully revised to take account of new developments, including AMOS Professional. More program examples, red hot tips and coding shortcuts make this the quickest route to programming success using this powerfull language. No previous experience is assumed and everything about AMOS programming is explained in a no-nonsense style which both beginners and experts will appreciate.

Mastering Amiga AMOS (Rev. Ed.)
Phil South, 336 pages, £19.95,
ISBN: 1-873308-19-1

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BUYERS GUIDE

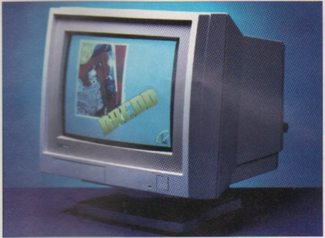
Few things will improve your Amiga's outlook like a monitor. CU AMIGA looks at a few new options.

Monitors

The Amiga has a world-wide reputation for graphical excellence that no other home computer can touch, and with the release of the AGA machines its standing has increased in leaps and bounds. What better way to do justice to these technicolour marvels than with a spanking new monitor?

MICROVITEC 1440 MULTI-SYNC

GORDON HARDWOODS • £439.95 • TEL: 0773 836781



The 1440 is both the most expensive and the most highly specified of all the monitors reviewed here. Although it only has a 14" screen, it occupies a substantial amount of desk space and weighs a ton. It comes in a cream coloured plastic case and features a tilt and swivel base. Of course, all of that is simply aesthetics – the important bit is how well the monitor works, and it works very nicely thank you!

The 1440 is a true multisync. That means that it can handle input at any horizontal frequency from 15 to 40KHz. To put that in context, Amiga games are output at 15KHz, and interlaced and productivity modes go out at about 33KHz. Unlike the Commodore monitors which use a fixed frequency tri-sync scanning mechanism (which restricts you to three specific horizontal input levels) the 1440 can cope with anything between the upper and lower limits.

The monitor sports a dot pitch of 0.28mm, which means that even the highest Amiga resolutions look crisp and clean. The smaller the dot pitch, the higher the resolution. Another advantage of such a small dot pitch is the fact that the colour saturation is significantly higher than similar products with a larger pitch.

Like most modern monitors, the 1440 has completely variable screen settings – you can alter the height and width of the display, as well as the contrast and brightness levels. However, what sets it apart from the rest is a special feature called Digital Memory Sizing (DMS).

Whenever you change screen modes (say from low resolution to productivity or from medium res to interlace) the screen area can change. With an ordinary monitor you would have to manually alter the screen set-up each time you change modes, but thanks to Microvitec's DMS technology, 1440 owners only need to set things up once, after that the monitor automatically remembers your preferences for each screen mode and activates them as soon as that screen mode is used.

The 1440 has an impressively sturdy design, clearly built to last. At £439 it's not cheap, but compared to Commodore's offerings you get a whole lot more for your money.

89%

TATUNG HI-RES VGA MONITOR

GORDON HARWOODS • £149.95 • TEL: 0773 836781

intel outside

With the A1200 and A4000, Commodore provided a whole new set of display options called productivity mode. Whilst this mode is almost as good as interlaced high resolution, it doesn't require flicker fixing hardware to keep a stable picture. The only problem is that productivity mode generates an RGB signal, instead of the usual 33MHz output, and ordinary monitors are not capable of displaying it. Of course, you could always buy a multi or tri-sync monitor such as the Microvitec model reviewed above, but if you've already splashed out for an ordinary monitor, this could be a cheap way to make use of productivity mode.

Gordon Harwood Computers are marketing the Tatung Mono as a cheap option that you buy to use in conjunction with an existing monitor. It only provides a mono display, but at £149.95 it's by far the cheapest way of accessing a high res display.

So why only mono? Well, the reasoning is that most users of productivity mode will be using it for desktop publishing, word processing or other serious applications. As 90% of these applications run on a black and white screen (and can work on a custom screen) there's no need to buy expensive colour displays in any case. At the price, that reasoning is fairly solid. Definitely worth a look.

75%

»

COMMODORE 1940/1942

SILICA SYSTEMS • £299/£399 • TEL: 081 309 1111

The obvious choice for your Amiga would be a Commodore monitor. After all, Commodore must know the Amiga better than anyone else, so surely they should produce the best monitor for the machine? That's the theory anyway.

The 1940 and 1942 are identical, but for the higher dot pitch of the 1942. The 1940 has a 0.39mm dot matrix, while the 1942 has a finer 0.28mm resolution, matching that of the Microvitec 1440. As you'd expect, the result is a clearer picture from the 1942, although the difference is very slight, even in high resolution modes. Both monitors give excellent picture quality in all screen modes, although as with the rest, without a flicker-fixer, interlaced graphics will still flicker.

Unlike the silent Tatung and Microvitec monitors, these offerings both have stereo sound. The sound quality is an improvement on the old 1084S monitor, although if you're into music, you'll still need a good hi-fi. Still, it's much better than no sound at all.

All the controls are located on the front of the monitor, concealed behind a flap just below the screen. There's a volume knob, over scan switch, vertical size and shift knobs, plus contrast, brightness and horizontal phase knobs.

The 1940 is good enough for even the highest resolution graphics work. Whether the slightly improved picture of the 1942 is worth an extra £100, only you and your eyes can decide.

82%

PHILIPS MONITOR TV

GORDON HARDWOODS • £239.95 • TEL: 0773 836781

Yes, it's a TV, but the picture quality is so good that it's well worth considering as a monitor. Most of this is due to the scart input. This allows you to bypass the normal RF TV connection, and run the signal straight in from the RGB Video port of the Amiga.

Most screen modes can be displayed, although Productivity is not on the menu. You won't get quite as good a picture as with a monitor (super hi-res is virtually unreadable), but the lower resolutions come through very clearly. Occasionally, when switching from one Amiga screen mode to another, the whole display goes out of sync, resulting in what looks like a screen full of garbage. It's worth bearing this in mind if you're regularly going to be switching back and forth through a few different modes.

There are no positioning or sizing controls, and the left half inch of the standard non-overscan screen was lost on the model we tested. Although the sound output is only mono, the speaker out-performs the stereo efforts of the Commodore monitors.

This isn't a monitor for the serious 24-bit graphic artist, but considering you also get a very good quality remote control TV for your money, it would make an excellent option for anyone who wants a better picture, but doesn't need the precision of a dedicated monitor.

87%

DO I NEED A MONITOR?

Well, of course you do, the question is which monitor do you need! Different applications use different screen modes, and different screen modes need different hardware to display them.

The most basic Amiga display is low res mode, which requires a bog standard monitor or TV to view it on. At only 15MHz the signal doesn't tax the monitor at all, and even on a television the display is passable. This mode is used for virtually all games because it has the least memory overhead and is the most suitable for multi-coloured animation. Medium res works in exactly the same way as low res (but has twice the horizontal resolution) and this is used for the Workbench display and many utilities.

Productivity and double PAL modes (found on the A1200 and A4000) give far higher resolutions than the previous two, but require a monitor capable of receiving a 33MHz signal. A dedicated VGA monitor (such as those used on the PCs) is ideal for displaying these modes, but can't handle the low res modes. Multisyncs are the only monitors capable of displaying all AGA modes. Needless to say, these are monitors which are capable of handling a variety of scan rates including the Amiga's 15 and 33MHz modes.

In any of the Amiga's resolutions, interlace mode can be used to double the vertical resolution. However, this causes the display to flicker on most monitors and TVs. In effect, the frame refresh rate is cut to 25 per second – half of the picture is drawn on the downward scan, and the other half is then 'interlaced' between the existing lines on the return scan. This isn't a problem with NTSC screen modes, as there's time to draw both 'laces' in one frame, but the flicker is very obvious with PAL screens. Although this flicker can be cured with a high persistence monitor, this solution causes as many problems as it creates. The only effective solution to the problem is a flicker fixer or similar hardware.

If you're planning on uprgading to a 24-bit graphics board, moving into DTP, or if you use your Amiga for any substantial lengths of time, a monitor is without doubt an essential upgrade to your current Amiga system.

Computing's innovative 4MB 32-bit memory ion for the Amiga 1200 is now available. The 4 includes these many features:

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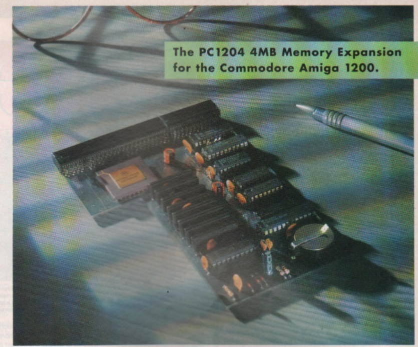

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FrameMachine

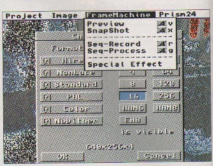
It's a video digitiser and it comes from Germany, but it's not VLab and it's not only a video digitiser. John Kennedy investigates.

Yet another video digitiser? Aren't there enough in the world? OK, to be honest that was my initial reaction, but that was also before I started using Electronic Designs' FrameMachine card. A glance at the specifications promised something really special, and so without further ado I reached for the screwdriver. Sorry Amiga, but your lid is coming off again...

FITTING

In order to use the FrameMachine you will need to be in possession of an Amiga with Zorro slots – in other words, an A1500, 2000, 3000 or 4000. I used the card in an A4000, and installation was – to put it mildly – terrifying. Tolerances in the design of either the Amiga or the FrameMachine card meant it wouldn't slot into place easily, and in the end I had to disassemble the entire computer, take out the daughterboard and plug in the FrameMachine before putting everything back together. I also needed to insert a sheet of plastic between the SIMMs and the card to prevent any cross-connections. Quite frankly I was amazed that nothing went pop the first time I powered up.

A1500, A2000 and A3000 owners won't have such a bad time installing the hardware, as there is more room available in the case (no nasty SIMMs to get in the way), although A1500s and A2000s will need an extra connection to the Denise chip in order to provide access to the necessary video signals.



Even if your Amiga doesn't support AGA modes, you can still create files for viewing on machines that do. You will need Kickstart 2 and above through, and a machine with lots of memory and a hard drive.

The manual helps with lots of explanatory photographs, but the appalling writing style can be more of a hindrance – the German to English translation is worse than poor.

I was close to giving up on the FrameMachine, and if I hadn't seen what I saw next, I would have said the effort required fitting the card wasn't worth it.

GRABBING

So, what was it? Full-screen, monochrome 25 frames a second video on the Amiga's monitor, that's what. It looked good, but there was much more yet to come.

Definitely the most fun part of the FrameMachine are its picture digitising capabilities. Its specification is almost identical to that of the VLab system because, in both, the incoming video signal is digitised as a YC waveform. In practice this means the grabbing can be done in real time, but converting the image to RGB will take a few seconds. Grabbing is a matter of watching the preview until the correct second, and then hitting a key. In an instant the preview stops, and the grabbed image is held on the FrameMachine's own memory. As it's stored in YC form, it's as close to 24-bit as makes no odds and, of course, this means the quality is excellent. Whether you want the image in four dithered colours, normal HAM or even superduper AGA HAM8 mode you need only select an option and the picture will be converted to your desired format in seconds.

If this sounds too complicated, a useful addition is the inclusion of a 'LOADER' for *Art Department Professional*. From within *AdPro*, the images can be previewed and then grabbed and immediately processed before saving. In this situation the AdPro JPEG saver is particularly useful as it can squash the huge raw 24-bit images into something a little more manageable.

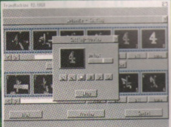
PRISM

The second part of the FrameMachine is an optional extra that's so good it's an essential extra. FM-Prism24 is a full 24-bit colour framestore that connects directly to the FrameMachine card without

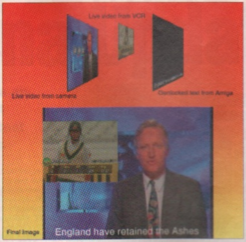
JARGON BUSTERS

- YC – A video signal protocol which keeps the luminance (black and white) information separate from the chrominance (colour) information. The result is a much crisper image than normal composite or RGB video.
- S-VHS – A home-based video standard, downwardly compatible with VHS but using YC signals.
- FPS – Frames Per Second – a measurement of the speed of a moving image. PAL television works at 25 fps.
- Digitising – Converting the information in an analogue signal (such as sound) into a digital form a computer can process.
- Frame Store – A piece of hardware that can keep an image in its own memory, and display it on a monitor. To be useful, they usually provide 24-bit colour.
- 24-Bit or Real Colour – When colour is stored using 24-bits of memory for each pixel, there are 16 million possible shades – more than enough to display every perceivable colour.

Below: In the 'cutting room' you can reassemble a sequence and even preview a miniature monochrome mock-up. Perfect for combining multiple source recordings.



With the FrameMachine you can not only grab images like this, you can even recreate them!



Using an external Genlock, you can combine three separate layers of video. The VCR source is re-scaled by the FrameMachine automatically, and is indistinguishable from the Camera source in quality.

using any extra Zorro slots.

The preview digitising mode now uses the Prism display, which means that images are in real time and full-colour on the Prism display. Again, *AdPro* users are catered for with a Prism saver, which means any image can be sent to the display card for a virtually instantaneous true colour display.

Prism has some extra capabilities up its digital sleeve – something that lifts it above being a mere framestore and will earn it a place in every desktop video studio. As I've already stated, the Prism can effortlessly combine Amiga video with incoming video but the full implications of this are amazing.

For starters, with on-board custom silicon trickery, Prism can instantly re-scale the video to one of six sizes, from 88 by 70 pixels to 720 by 560 pixels. The scaled video can then be overlaid onto the Amiga screen to provide a full-colour 'Picture in picture' window. No matter what your Amiga screen mode, you can watch real TV on a window anywhere on the screen – it has to be seen to be believed.

Prism doesn't stop there, for the output connector at the back of the card is fully capable of supporting a Genlock, so now we're really getting into the realm of the video professional.

Here's one application – an electronic newsroom. The camera is pointing at a newsreader, and this video signal is sent to the genlock input. Meanwhile, the live footage from a video recorder is sent through the FrameMachine system and is scaled and positioned over the shoulder of the newsreader. Finally the Amiga is used to generate subtitles or even animations in the foreground. The complete graphic sandwich can be recorded directly to video tape, and depending on the genlock used, you can master the entire project in S-VHS for near broadcast quality results.

As with any 24-bit framestore, there is always the possibility of a 16 million colour paint package, and although none are available at present the FrameMachine is so good someone is bound to convert *TV Paint* or something similar eventually.

MONITORING PROGRESS

As Prism has its own video output providing both framestore and the Amiga output, you can get by fine with only your existing computer monitor. However, if you are lucky enough to have an extra monitor (or TV with SCART input), you can become an 'advanced' FrameMachine user.

With the correct menu options, the Prism and Amiga displays can be separated, so that each is shown on an individual screen. As you grab frames, the full-colour image is shown for comparison and timing. Animations can be previewed in 24-bit colour... oops, did I say the magic word?

In the world of home movies even the most innocuous of household pets can suddenly be thrust into the spotlight. Here, my cat is about to star in his own epic.

ANIMATION

You can't have escaped the fact that animation is really starting to take off on the Amiga. Digital video is now the 'next big thing' and with cards such as the FrameMachine and Macrosystems' VLab it's all happening on the Amiga.

Both of these cards feature facilities for grabbing sequences of video in real time, although it has to be said that the FrameMachine is sadly lacking. Electronic Designs have opted for a brute force method of video capture. After selecting the number of frames and resolution you require, you play the video and hit start. The frames are all stored in memory (or on disk if you are not working at 25 fps), and so you need a fantastically large amount of memory to grab any decent length of footage. I thought my A4000 was fairly well endowed with 10Mb, until I used FrameMachine. I only just managed to grab the first half of the opening to Red Dwarf in 1/3 of a screen sized images – about 300 frames – before the software barffed up an 'out of memory' message. It was like owning a ZX81 without a RAM pack again.

By comparison, Macrosystems realise that frame grabbing takes time, so with cunning software they use several passes of the video to grab the frames. As long as you gave the hard disk space, you could set the system to digitise an entire film overnight.

Until the FrameMachine software is upgraded to provide this facility, the sequencing grabbing option is mostly for amusement only. If you do like working with postage sized images, a cutting room screen will allow you to assemble the images into a new order before the entire sequence is converted to HAM8 or whatever.

CONCLUSION

OK, so the FrameMachine was well worth the effort of installation. The software is easy to use, and although it requires WB2 or above, AGA users gain support for the new graphics modes.

Although a fast processor isn't essential as most of the work is done by custom hardware, it certainly helps when it comes to image rendering. Likewise you'll need a hard-drive and at least 3Mb of RAM before you can even start tinkering with this beast. For serious use, swap your house for some SIMMs.

When I come to remove the card from my machine I know I'll miss it immediately. The 24-bit display, the instant access to digitised graphics and most of all the promise of a terrific animation system – guess I'll just have to start saving... ***Note***: For a limited period the FrameMachine is being sold with an Electronic Designs genlock for £999. CU

ALTERNATIVELY

The FrameMachine system has a startling resemblance to Macrosystems' VLab digitiser and Retina display card. Both deal with YC video, both produce excellent quality results.

The VLab software currently has the edge because of its cunning interleaved animation grabbing system, but the FrameMachine has the more cunning hardware.

As the digitiser and Prism display card are so tightly coupled – the display card is plugged into the digitiser and therefore doesn't use another Zorro slot – the speed is incredible. You can watch overscan video being digitised in full colour in real time (25 frames per second) on the Prism output, whilst running the Amiga normally.

Even better, the FrameMachine gets around the Workbench emulation which Retina requires by superimposing the Amiga and Prism video signals together, with optional scaling. The downside is that you can't run Amiga programs using the 24-bit framestore display.

Other systems which must be mentioned are the Opalvision card – now at a very reasonable sub-£600 price – and the GVP IV24.

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EASE OF USE ♦♦♦♦♦♦♦♦◊◊ 84%

Installation is a pain. Software is a dream.

VALUE FOR MONEY ♦♦♦♦♦♦♦♦♦◊ 98%

With so many features in one Zorro slot, it's a genuine bargain.

EFFECTIVENESS ♦♦♦♦♦♦♦♦♦◊ 96%

Image quality is excellent, and picture in picture mode stunning.

FLEXIBILITY ♦♦♦♦♦♦♦♦♦◊ 94%

It can grab, display and manipulate. It will do it in S-VHS too! The A4000 needs Kickstart 2 AGA support.

INNOVATION ♦♦♦♦♦♦♦♦♦◊ 92%

A complete video studio on a card. Add a genlock and set up business.

> ***It's a framestore, a framegrabber, an animation tool, a digital genlock – it's bloody marvellous!***

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Retina Update

CU AMIGA TOP RATED

John Kennedy gets an eyeful of the latest upgrade to a low-cost graphics enhancer.

Retina is a 24-bit graphics card from the people who brought us *V-Lab*, one of the best Amiga digitisers so far. We reviewed Retina thoroughly in the April 1993 issue, but since then the system has been given a bit of a spit and polish. Even though the update is via software only, it's still quite substantial.

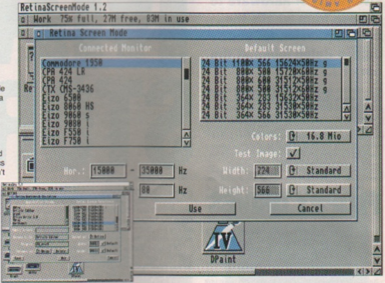
Although it offers more colours than a standard Amiga, Retina can actually speed up your graphics operations by a factor of 10 or more. Yet there isn't a single Motorola 68-anything processor in sight, so how's it all done? It's due to the fact the Retina is a true 24-bit board, so programs such as *Art Department Professional* don't have to wade through hundreds of complicated 'pick the best colour palette' algorithms to display the image. Instead, the true colour picture is displayed as soon as the 24-bit image is loaded in to Retina's own RAM.

Retina comes with a Harlequin emulation program which means it can run all sorts of exciting 24-bit software such as *TVPaint*. The Harlequin emulation is wonderful – for example, *Real 3Dv2* comes with a Harlequin driver and when it and Retina are put together, the result is one of the most powerful desktop 3D rendering systems available today. Picture it – on one monitor exists the normal wireframe editing screen, whilst on the other is a constantly updating true colour rendition – it's an awesome combination.

SOFTWARE UPDATES

The software originally supplied with Retina included a monitor set-up program and a Workbench emulator – the latter provided a way of displaying the normal Amiga video output through the Retina card, which was very handy if you only had one monitor or you wanted to make use of a particular Workbench program.

The emulator has been improved to cope with screen depths of up to 8 bitplanes (256 colours) which means your Workbench can start to look pretty neat. It's not particularly fast coping at these colour depths, but then neither is any AGA Amiga.



RetinaScreenMode 1.2

Work 75% full, 27M free, 83M in use

Retina Screen Mode

Connected Monitor:
- Commodore 1950
- CPA 424 LR
- CPA 424
- CTX CMS-3436
- Eizo 6500
- Eizo 8060 HS
- Eizo 9060 s
- Eizo 9080 i
- Eizo F550 i
- Eizo F750 i

Default Screen:
- 24 Bit 1100x 566 15624x50Hz g
- 24 Bit 800x 500 15720x60Hz g
- 24 Bit 800x 600 31512x50Hz g
- 24 Bit 800x 500 31512x60Hz g
- 24 Bit 364x 283 15632x50Hz
- 24 Bit 364x 283 31530x50Hz
- 24 Bit 364x 566 31530x50Hz

Colors: 16.8 Mio

Test Image: ☑

Hor.: 15000 - 35000 Hz

80 Hz

Width: 224 Standard

Height: 566 Standard

Speaking of AGA, the Retina Workbench emulator can even fake a HAM8 display, although I have to be convinced as to why you would want to. Other improvements see the *AdPro* saver providing ARexx support, and the RetinaDisplay stand-alone image viewing program now supports images compressed with the JPEG format.

ANIMATION

By far the most important part of the upgrade is the addition of some animation software. MakeRACE will take images of either 6, 8 or 24 bitplanes deep and crunch them into a single animation file. This means, for example, that the 16 million colour images produced from an *Imagine* rendering session can be displayed in their full colours.

I was more than a little sceptical about this, so proceeded to render 400 frames. In the morning, and after conversion by MakeRACE, I played back the animation with the companion program PlayRACE. The result? Full colour, fast images that looked so real I could have picked them out of the screen. Even in low resolution (320 by 256) the true colour means the animation possibilities are remarkable.

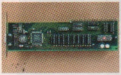
CONCLUSION

The more I use Retina, the more I want one. As soon as I load any graphics software, the Retina card is used and my computer system mysteriously acquires an extra monitor, displaying my creations in full 24-bit. Being able to edit files with one screen, and watch the finished appear nearly instantaneously on the other monitor is amazing. It's like having two computers in one.

Now more than ever, there is no reason why A2000/A1500 owners have to continuing to look at the AGA chipset with envy. By plugging a Retina card into a free Zorro slot, the graphic output is even better than the A4000. CU

JARGON BUSTERS

- **24bit colour** – When an image is displayed in 24-bit colour, more than 16 million shades are displayed on-screen – ample to ensure an image looks as realistic as possible.
- ***Art Department Professional*** – An image processing program that's so powerful and easy to use that it has more or less become the de facto standard.
- **AGA** – The new generation of Amigas use the AGA chipset, which can provide up to 256 colours in any resolution, plus the new HAM8 mode.
- **HAM8** – A piece of cunning trickery to allow the Amiga to display pseudo 18-bit images on-screen. It takes a trained eye to tell the difference between a hi-res HAM8 image and a true 24-bit one.



Now non-Amiga owners can experience the joys of flicker-fixed, 256-colour (morally dubious) Workbench backdrops.

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VALUE FOR MONEY ◆◆◆◆◆◆◆◆◆◆◆98%
Instant AGA-plus upgrade, including a rock-steady flicker fixer.

EFFECTIVENESS ◆◆◆◆◆◆◆◆◆◆◆92%
Improved software makes all the difference.

FLEXIBILITY ◆◆◆◆◆◆◆◆◆◆◆84%
More software than ever will work with Retina.

INNOVATION ◆◆◆◆◆◆◆◆◆◆◆94%
The animation features make this one hot piece of kit.

> *Essential for A2000 stalwarts, and all interested in graphics.*

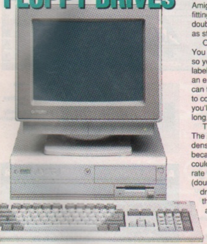
OVERALL 92%

MASS STORAGE

Sooner or later we all complain that our Amiga doesn't have enough memory. But with a massive range of hardware to choose from what's the best expansion for you? Jolyon Ralph looks at the options.

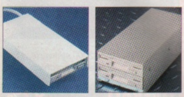
I remember when I longed for the storage that a 3.5" floppy disk drive would give me – over 700Kb, on one disk, and so fast! Nowdays, with modern games often taking up 2Mb rather than the 32Kb of 10 years ago, and even the simplest of productivity programs requiring lots more still, the floppy drive is showing its age. Most Amiga owners now see the need for a hard drive, but hard drives aren't the only options for expanded storage.

FLOPPY DRIVES



The A4000 was the first Amiga to officially support a High Density drive, which was included as standard.

The floppy drive is growing up. The drive supplied with the Amiga 600 and 1200 is functionally identical to the drive supplied with the Amiga 1000 back in 1985. It's the same speed and the same 880Kb capacity (although now with Fast Filing System in Kickstart 2.04 and above you can store slightly more on each 880Kb disk).



Amiga external floppy drives are plentiful and reasonably cheap. Most suppliers stock a range of drives.

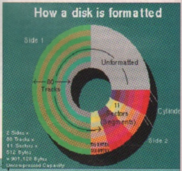
However, starting with later models of the Amiga 3000 and 3000Tower, Commodore started fitting the 1.76Mb Hi-Density disk, storing exactly double the data of the older model. It is now fitted as standard in the Amiga 4000.

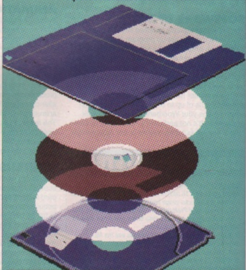
Of course double storage doesn't come for free. You can't use normal disks as high density disks, so you need special high density disks (usually labelled MF2-HD, DS-HD, or 1.44Mb) which have an extra hole cut into one corner of the disk. You can try cutting holes into normal disks if you want to convert normal 880Kb disks to high density, but you'll almost certainly find the disks don't last very long, so I wouldn't recommend it.

The other drawback to high density is speed. The Amiga couldn't handle high density drives previously because the custom chips couldn't handle the data transfer rate from the high density disks (double that of normal disk drives). Commodore 'solved' this by making the drive spin at half normal speed when high density disks are used. This means formatting and copying these disks takes twice as long as normal!

Standard 880Kb disks can be read as normal in these drives, so you will have no problems with software that is supplied on normal disks, and I've not seen anything that isn't!

This drive can be fitted to any Amiga 500, 1500, 2000 or 3000, if you can get hold of it! The drives are very rare, and are made especially for the Amiga 3000/4000. The model to look for is the Chinon FB-357A, rather than the more normal Chinon FB-354 model, which is the 880Kb standard drive. Fitting into an Amiga 500/1500/2000 requires a little alteration to the drive, you may have to remove the outer casing and swap with your current 880Kb drive.





The composition of a standard 3.5" disk. The data carrying layer is sandwiched by a protective layer embedded in the plastic case.

»

For those who require more than just double floppy capacity, but want more flexibility than a single hard disk can provide, the Insite 21Mb Floptical drive may be the answer. Using special 3.5" floppy disks that can store 21Mb (the same as an A590 hard drive), simply buy another 21Mb disk when you have filled up the last one. You will need a SCSI interface to use this drive, so it's ideal if you already own a hard drive which you have grown out of, although the 21Mb size may be too small if you are serious about multimedia, 3D graphics or desk top publishing, which can often need large amounts of storage space readily available.

HARD DRIVES

It's now reached the stage where serious work on the Amiga invariably requires a machine fitted with a hard disk. There are literally thousands of combinations of drives and controllers available for the Amiga, so making the right choice is more difficult than it may seem.

First, you have to chose the right interface. This will depend on what Amiga you have – see the explanation on page 112. Then check where you need to put the drive in. Check what drive bays you have available, if any. If you do not have any internal space to put a hard drive, you will probably need an external drive, but beware – this can cost anything up to £100 more than the equivalent internal unit.

Most modern hard drives are very fast. Compared to drives of even two years ago, it's difficult to find a 'bad' drive on the market. Quantum, Maxtor, Toshiba, Digital and Fujitsu all make drives that are popular with Amiga owners, and even Seagate and Western Digital who, two or three years ago had some decidedly ropey drives in their range, now supply nothing but excellent products.

1ST RULE OF HARD DISKS

CALCULATING SPACE
Add up however many Workbench disks, data disks, application disks, etc. that you will want to install immediately on your hard disk and multiply by four. That will give you a minimum megabyte size that you should look for.

2ND RULE OF HARD DISKS

YOU CAN NEVER HAVE TOO MUCH STORAGE!
Data will always expand to fill the hard disk space available, a bit like Koi Carp in a large fish pond, but not as colourful.

It used to be difficult buying hard drives, but now I can honestly say that unless you are looking at specialist applications (such as digital video editing or CD-ROM mastering) you should go for the most megabytes per pound that you can afford, regardless of manufacturer.

The last important thing to realise when planning to buy a hard disk is never underestimate the amount of space you will need.

Unless you are really not serious about your Amiga, I'd suggest that anything under 60Mb is too small whatever. You will not believe how fast space can go. As I write, the 80Mb hard drive in this hard disk is 89% full. Having said that, the 1Gb (1024Mb) of hard disks I have at the office is also over 80% full.

PLEASE EXPLAIN

So, we know what sort of hard disk is needed, we know what size (both physically and in capacity) is required, we even know that whatever drive we get it's bound to be too small eventually, but what exactly IS a hard drive?

Hard disks have developed incredibly over the last 10 years, but still rely on the same basic technology. Inside the case is at least one hard metal disk, called a platter. Small drives often have one or two platters. Large 1.2Gb devices can have nine or more. Unlike the flimsy plastic disk inside a floppy disk, the platters are tough 2mm thick metal, hence the name hard disk. These have a magnetic coating, similar to the coating on a floppy disk, but made at a much higher precision.

The platters spin at 3600 revolutions per minute, when the hard disk is operating, giving it the characteristic hard disk whining noise. Some modern drives rotate at 4500 rpm, or faster.

Above and below each disk float the heads. Unlike a floppy the heads never touch the hard disk (unless something goes wrong). The heads float a thousandth of a centimetre above the surface of the disk, tens of times smaller than the width of a human hair. The gap is so small that atmospheric particles, such as pollen or even cigarette smoke, are large enough to get stuck between the head and the disk, causing the drive to fail. For this reason the drive is sealed (except for an air pressure equalization vent covered with an ultra fine microfilter).

Apart from this, hard disks work in almost exactly the same way as a floppy disk, a magnetic read/write head moves over the surface of a spinning disk to read and/or write data.

REMOVABLE DRIVES

A lot of people suffer from the the second law of hard disks syndrome – there's always too much data and not enough hard disk space. What do you do? Well, if you're rich you buy a larger hard drive. But if you're clever, you buy a removable hard drive system. There are several now available, and they use a variety of different technologies to achieve the same effect.

SYQUEST

The Syquest drive is the most popular of the removable drives on the Amiga. It works in a very simple way. Take the hard rigid disk from a hard drive, and mount it in a removable cartridge. When you have filled up one disk you can take it out, put in another cartridge and you can carry on without problems. Syquest is available in 44Mb, 88Mb and now 105Mb forms with both SCSI and IDE interface versions. Slightly slower than a normal hard disk, but not something you'd notice unless you were running a speed check program.

MAGNETOOPTICAL

MagnetoOptical (or MO) is the big brother to the Syquest. This uses a combination of magnetic and optical technology (hence MagnetoOptical) to provide access to phenomenal amounts of data storage. Available in two forms, the more affordable 128Mb MO, available for under £1000, and the less affordable 600Mb MO, available for around £2000. There are several advantages of MO technology. First, the price of the cartridges. A 128Mb MO cartridge costs less than a 44Mb Syquest cartridge, and obviously much less per megabyte. Once you have bought a drive and a few cartridges, the more expensive MO begins to pay for itself. The technology is also much cleverer, and I do like clever things.

Normal magnetic media works by dragging an electromagnet over a magnetically sensitive surface that changes state, or magnetic polarity (N or S), in a magnetic field. The problem with standard magnetic technology is making the magnet in the read/write head small enough that it only changes the data in the area under the head, and not the data in the area immediately around it. And of course, if your little brother/kid/neighbours cat decides to do their Iron Filings and Magnet experiment on top of your drive/cartridge, or someone decides to clean up the place and put those nice shiny cartridges safely on top of the hi-fi speakers, then it's goodbye data...

MagnetoOptical gets around this with a two stage process. It uses a material that is not mag-

»

A typical bare drive mechanism. Such devices are generic and will work on any machine providing you have the right interface.

The innards of a standard magneto-optical drive and cartridge. Notice the magnetic at the centre of the board.

» netically alterable at room temperature, but only when heated up. Writing data to this type of disk requires both a magnetic write head and a laser, which is focused on a tiny area of the disk which then heats up to the required temperature to change. As the laser can focus extremely accurately, the area actually changed by the magnet is tiny, so you can get 128Mb of data into a cartridge only a little larger than a 3.5" disk.

The third removable hard disk option is by far the simplest. Take a standard 3.5" or 2.5" hard drive, and put it in a box that can be removed from your computer. Buy another drive and removable frame, and you can swap them around. Not the cheapest and not the most ideal option, but it uses real hard disks running at real hard disk speeds, and it's also secure. Do your work at the office, unplug the drive at the end of the day and lock it in your safe, or you could even take it home and plug it into another Amiga.

CD-ROM

Now becoming increasingly popular on the Amiga is CD-ROM. Whether you want the latest game, hundreds of fonts, libraries of 24-bit image files, or the entire Fred Fish Public Domain back catalogue, buying them on CD-ROM would save a fortune than it would otherwise cost in purchasing or downloading the files from other sources. Currently there are three ways to link a CD-ROM to your Amiga.

A570

If you have an Amiga 500 or an Amiga 500+ you can buy the Commodore A570 CD-ROM. This is currently a bit of a bargain at £149. In fact, if your A500 has been relegated to the cupboard, or for the kids to play games on, now might be the time to swipe it back, just to use it with this wonderful drive. You can transfer files from CD to the floppy drive, or you can use the Parnet parallel network cable (available for around £20) to link your A500/A570 to your newer Amiga and access the CD-ROM over the network from your main machine.

Commodore's A570 gave CDTV compatibility to the A500 but, unfortunately, nothing else.

CDTV

With some places now selling the CDTV at under £200 or less, this is again a bargain that serious Amiga users should consider. Buy a CDTV, stick it under your monitor, and link it to your Amiga with the Parnet cable mentioned before. You can then access CDs from your Amiga with ease.

SCSI CD-ROMS

For those who want top performance, the best way is with a real SCSI CD-ROM drive (such as the Toshiba XM3401B) linked to your Amiga. You will need a SCSI controller and some special Amiga driver software (called a CD-ROM filesystem), but you have the advantage that it will run between three and six times faster than »

Commodore
CDTV
12:20
Commodore

It was revolutionary but, unfortunately, the CDTV failed to capture the imagination of the consumer at large – in spite of being black and expensive. Some groundbreaking software was produced for the machine though, and many discoveries will be re-implemented.

» using a CDTV or A570 over a Parnet link.

CD-ROM drives are read-only. This means you can't make your own disks (unless you have lots of money and time to spare) but there are plenty of Amiga and CDTV discs out there to buy, and you can access data on standard PC CD-ROM discs and, with the correct CD-ROM filesystem, Macintosh discs, too. You can even play audio CDs.

CD-ROM discs look identical to the standard Audio CDs your Hi-fi takes. The great thing about CD is that there are no moving parts touching the disc, so they should, in theory, last an awfully long time.

They are made by taking a circle of clear plastic, stamping the CD data onto one side with a machine that looks like a hi-tech printing press, and then coating that surface with an ultra-thin aluminium layer. This is topped off with another thin layer of plastic, the label is stamped on, it's put in a box and wrapped up for sale.

Most CD-Rom drives take CDs in a special case called a Caddy. It looks like an overgrown floppy disk with one transparent side. You flip open the top, insert your CD, and you no longer have to touch the actual CD, it's in its own protective case. Unfortunately, Commodore decided to drop the caddy from the new machine, the Amiga CD32, but the A570, CDTV, and almost all SCSI CD-ROM drives still use the caddy. It may be slightly more expensive, but it's worth it to keep your valuable discs safe.

As CD-ROM drives conform to the ISO9660 standard anyone will do, even those designed with the PC in mind.

Within 18 months it is highly likely that the majority of Amiga software will come on these silver discs rather than on floppy. Not only can you get over 660 disks worth onto a CD, but it's cheaper to produce one CD than the four or five disks an average Amiga product now comes on.

CD32

Although no more an Amiga computer than the CDTV, the CD32 is likely to be better supported and so may become a route by which Amigas can access CD-ROMs in an Amiga sort of way instead of via a seperate SCSI drive as they do at present.

Upgrades have been promised for the A1200 and the A4000 to allow them not only to access CDs in this way, but also to emulate the CD32 console.

This could be more important than the A570 was, as the CD32 will shortly support an MPEG cartridge allowing it to conform to the VideoCD standard of Full Motion Video. This is the standard which will also be supported by other CD consoles such as the excellent but overpriced CD-i unit from Philips.

Backing-up is hard to do, unless you have a nice tape-streamer. The latest models employ DAT technology.

TAPE STREAMERS

The last group of storage devices to gain a mention are probably the least widely used on the Amiga.

Tapestreamers are older than hard disks in technology terms. They sound primitive, a cassette holding a long reel of tape being read and written to by a stationary magnetic head. Although they can be used as a storage device in their own right, tape streamers have become a single-role device on modern systems, a role ignored by far too many users: back-up.

When 10Mb hard disks were the norm it was not too much of a hardship to back-up your drive to floppy disk once a day. When 20Mb hard drives took over, the once a day back-up became every other day. Now I'd challenge anyone with a larger than 100Mb hard drive to prove that they do floppy disk back-ups other than in dire emergencies. Often these dire emergencies are immediately after a serious system crash, exactly the wrong time to do a back-up. Tapestreamers provide a simple way to back-up large amounts of data to tape in case of accidents.

There are several types of tapestreamers available on the Amiga. All the ones I have used are SCSI devices.

DC6000 TYPE: Standard 150/250Mb tapestreamers, such as the popular Archive Viper, take industry-standard DC6150/6250 tapes to store either 150Mb or 250Mb of data. They can back-up at over 5Mb per minute and are ideal for small to medium sized hard drives. High density tape drive versions can use similar sized cartridges to store up to 545Mb on one tape.

4MM DDS (DIGITAL DATA STORAGE): 4mm Tapestreamers, or DAT tapestreamers use the little matchbox-sized DAT (Digital Audio Tape) cassettes to store obscene amounts of data (up to 2Gb, or 8Gb with hardware data compression) at the incredible speed of 14Mb per minute. For anyone with over 600Mb of hard disk space a DAT back-up system is almost essential.

8MM EXABYTE: 8mm is similar in principle and performance to 4mm DAT, except it uses 8mm tapes identical, at least in casing, to Hi-8 Video Tapes. About 1.5–2 times the cost of an equivalent DAT system, 8mm has the advantage of capacity. It can store 5-10Gb on a tape with ease, and future 8mm systems promise much, much more. Only for those with serious systems to back-up.

Whatever system you choose, you will need tape back-up software. This varies from the simple and cheap PD software (BTNTape and TAR are a good back-up combination for tape use) to high quality packages like *Quaterback 5.0* and *AmiBack 2.0*, both of which support all three types of tape drives well.

DEVICE SIZES

Most storage devices conform fairly closely to one of five standard sizes.

2.5": The size of the miniature hard disks that fit in the A600/1200.

3.5": Standard sized 3.5" hard drives are 1.6" high. Only larger capacity 3.5" drives now come in this format.

3.5" 1"HIGH: As the name suggests, the same as 3.5", but only 1" high (some floppy disk drives are now even thinner than this)

5.25" FULL HEIGHT: Giant monster-sized boxes compared to 2.5" drives, the format used by the original 5Mb and 10Mb hard drives of 10 years ago. Now only very large capacity hard drives (>1000Mb) and the more complex optical drives are supplied in this format. With all Amigas except the 3000T and 4000T these will need to be fitted externally.

5.25" HALF HEIGHT: The most common format for CD-ROM, Tapestreamers, Syquest drives, etc. It's just what it says, exactly half the height of the 5.25" Full Height drives, but equal in other dimensions. The Amiga 2000/1500/3000T/4000/4000T all have 5.25" Half Height bays to add expansion devices. It's now quite rare to find hard drives in this format. Most drives are now 3.5" or smaller.

It's possible to mount smaller hard drives in a bay designed for a larger device, special mounting frames are available just for this purpose, and most Amiga SCSI controllers (e.g. A2091,A4091,GVP HC8+) have room on the card for mounting a 3.5" device.

»

» ALL ABOUT INTERFACES...

All the devices mentioned in this article will need some sort of interface to connect to your Amiga. Some of these interfaces are included as standard in your Amiga, others you will have to buy separately.

For those with Zorro capability, finding an interface isn't hard – virtually every interface is available as a standalone card. Most of these cards actually combine more than one interface standard (dual IDE and SCSI combinations are common) and may include extra RAM capability as well.

When choosing an interface it is important to bear in mind future expansion as well. You don't want to have your Amiga bogged down with interfaces with one drive attached to each. For this reason many people choose a SCSI drive, as it allows many more units to be connected to the same interface. However, there is more than one type of SCSI. Here is a brief selection of the range of interfaces available.

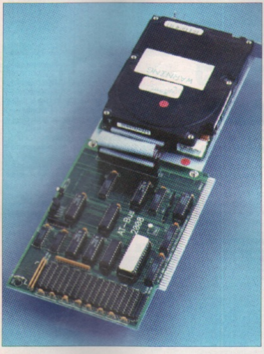
FLOPPY INTERFACE

External floppy drives, both standard 880Kb and the newer 1.44Mb hi-density drives both connect to the standard 23-way floppy disk port on your Amiga. Some external tapestreamers can connect to this port, too.

IDE

The AT-IDE interface is now included as standard in the Amiga 600, 1200 and 4000 computers. Optional AT-IDE interfaces can be bought for all other Amiga models. IDE, or Integrated Drive Electronics, is used to link cheap hard drives to the Amiga, both 2.5" in the A600/1200 and 3.5" in the Amiga 4000. IDE is limited in two devices, called Master and Slave, and currently only hard disks and removable drives (e.g. Syquest) are available for IDE but, contrary to popular belief, it is actually quite fast and similar in performance to a decent SCSI-1 set up.

IDE comes with two different types of interfaces: 40pin, which is used on the 3.5" drives found in the Amiga 4000, and 44pin, used on the small 2.5" drives for the A600/1200. Although it's possible to get adaptors to convert between the two standards, it's not easy and not highly recommended. If you have a 44pin connector, stick to 2.5" drives, and if you have a 40pin connector, use 3.5" drives.



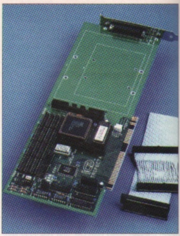
Left: A standard hard drive expansion for the Amiga consists of a ZORRO II card containing the interface with the drive mechanism piggy-backed on top.

SCSI (OR SCSI-1)

The SCSI interface is the favourite amongst third-party suppliers and professional Amiga owners. SCSI stands for Small Computer Systems Interface, and allows you to link up to seven SCSI devices to your computer, including hard disks, optical drives, scanners, tape streamers, CD-ROMs, etc. The recommended SCSI-1 interfaces are – GVP HC-8/HD-8 (For A500/1500/2000/4000), Commodore A2091 (For A1500/2000 only – does NOT work well with A4000).

SCSI-2

The new replacement for SCSI is called SCSI-2. It is compatible with SCSI (SCSI devices will work with SCSI-2 controllers, and vice versa, but only at standard SCSI speeds) but offers major performance benefits. There are three different varieties of SCSI-2:



The SCSI-2 interface for the Amiga has arrived in the shape of the ICD Trifecta card.

SCSI-2 (standard). This is just a new SCSI command set (a set of rules for data transmission) that makes more efficient use of standard SCSI-1-type cabling. Most new devices support SCSI-2 commands.

SCSI-2 FAST: This is the standard supported by the new Commodore A4091 SCSI-2 board for the Amiga 4000. It uses all 50 pins of the SCSI cable rather than the 25 used previously, so external SCSI-2 ports use a miniature 50-way connector rather than the normal 25-pin connectors found on the A590, Amiga 3000, GVP cards, etc. It can transfer data at over double the speed of standard SCSI.

SCSI-2 WIDE: SCSI-2 Wide is currently supported by only two or three drives worldwide, and no Amiga controllers yet support this. It takes SCSI-2 FAST but transfers data 32-bits at a time, double normal SCSI-2. Up to four times SCSI-1 data transfer is available with SCSI-2 wide.

OTHERS

Various other interfaces are still available. MFM and RLL are obsolete interfaces which were found on PC hard drives until about two or three years ago. They are dificult to set up, slow and unreliable, but since they have gone out of fashion they are also very cheap (which is one thing in their favour). The Commodore A2090 and A2090A used these drives, as does the Cumana Com-201 interface. Another PC interface that hasn't survived in popluarity now that SCSI and IDE have taken the world by storm is ESDI. Unfortunately no-one ever made an ESDI interface for the Amiga, and it seems very doubtful that anyone ever will, so the only way to use ESDI drives with the Amiga is via some kind of PC Bridgeboard. CU

WHAT INTERFACE DO YOU NEED?

Some Amigas have hard drive interfaces built-in as standard, others do not. Here are our suggestions for expansion cards to use with those that do not.

MODEL	HD FLOPPY	IDE	SCSI	SCSI-2	DAT/TAPESTREAM	CD-ROM	FLOPTICAL
Amiga 1000	no	various	various	no	no	SCSI only	Insite via SCSI
Amiga 500	Power XL/Chinon	various	various	no	via SCSI	A570 / SCSI	Insite via SCSI
Amiga 2000	Power XL/Chinon	Zorro Card	A2091 Fitted	Trifecta	via SCSI	SCSI only	Insite via SCSI
Amiga 1500	Power XL/Chinon	Zorro Card	Zorro Card	Trifecta	via SCSI	SCSI only	Insite via SCSI
Amiga 3000	fitted	Zorro Card	fitted	Trifecta	via SCSI	SCSI only	Insite via SCSI
Amiga 3000T	Amiga 3000T	Zorro card	fitted	Trifecta	via SCSI	SCSI only	Insite via SCSI
Amiga CDTV	no	Taurus	Taurus	no	no	fitted	no
Amiga 600	Power XL/Chinon	fitted	no	no	no	no	no
Amiga 1200	Power XL/Chinon	fitted	GVP/ICD card	not yet	via SCSI	SCSI/CD32 upgrade	Insite via SCSI
Amiga 4000	fitted	fitted	GVP HC8+	A4091	Via SCSI/SCSI-2	SCSI/CD32 upgrade	Insite via SCSI
Amiga 4000T	fitted	fitted	GVP HC8+	A4091	Via SCSI/SCSI-2	SCSI/CD32 upgrade	Insite via SCSI

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  For extra high quality output. Features include:
  - Definable Dither Routines
  - 16-point Colour Adjustment
  - Ink Compensation Correction
  - Workbench 2/3 GUI
  - Prints up to 256 Shades of Grey
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9-PIN 80COLUMN 192CPS

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ON-SITE WARRANTY
1 YR - ONLY £10+VAT - POS 8515

- *Seikosha SP-1900 Plus*
- *9-Pin Dot Matrix*
- *80 Column*
- *192cps Draft, 48cps NLQ*
- *1K Printer Buffer + 2 Fonts*
- *Parallel Interface*
- *Graphics Resolution: 144 x 72dpi*
- *Epson and IBM Emulation*
- *Auto Sheet Feeder Option*
- *Friction Feed and Push Tractor - Auto Paper Load, Paper Parking*
- *FREE Silica Printer Starter Kit*

PRINTER RRP	£149
STARTER KIT	£25
TOTAL VALUE:	£174
SAVING:	£65
SILICA PRICE:	£109

£109
+ VAT = £128.08 PRI 8195

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- *21K Printer Buffer + 5 Fonts*
- *Parallel and Serial Interfaces*
- *Graphics Resolution: 240 x 144dpi*
- *Epson and IBM Emulation*
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- *Optional Auto Sheet Feeder Unit*
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PRINTER RRP	£185
STARTER KIT	£25
TOTAL VALUE:	£210
SAVING:	£71
SILICA PRICE:	£139

£139
+ VAT = £163.33 PRI 8204

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- *80 Column*
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- *20K Buffer + 2 Fonts*
- *Optional Font ROM*
- *Parallel Interface*
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STARTER KIT	£25
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COLOUR
SEIKOSHA SL 95
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ON-SITE WARRANTY
1 YR - ONLY £10+VAT - POS 8515

240 CPS **80** COLUMN

- *Seikosha SL-95 - 24 pin - Dot Matrix*
- *240cps SDraft, 192cps Draft, 64cps LQ*
- *43K Printer Buffer + 9 Fonts*
- *Parallel Interface*
- *Graphics Resolution: 360 x 360 dpi*
- *Epson LQ860/850/2500/2550 Emulation*
- *Colour Printing as Standard* (Includes Colour Ribbon - Black Ribbon Optional Extra)
- *Semi Auto Single Sheet Feeder*
- *Optional Auto Cut Sheet Feeder*
- *FREE Silica Printer Starter Kit*

PRINTER RRP	£249
STARTER KIT	£25
TOTAL VALUE:	£274
SAVING:	£85
SILICA PRICE:	£189

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GAMES

PG003 AIR WARRIOR Good flight Sim + (not A600!)
PG006 ANTEP & SLOT CARS role playing game+ Y
PG021 ATIC ATAC Really playable game! + Y
PG023 BATTLEFORCE strategy war game!
PG024 BLACKJACK A good card game! +
PG026 CASTLE OF DOOM Excellent! Get it + Y
PG028 COLOSSUS & WORLD Fab adventures !+ Y
PG031 DARKSTAFF Spec emulated text adventure!+
PG032 DRAGONS CAVE D&D style game Mega+ Y
PG034 ETERNAL ROME Strategy & DOMINOES+ Y
PG046 HACK Great text adventure-infocom style! +Y
PG047 HOLLYWOOD TRIVIA Nice Trivia Game! +
PG048 HOLY GRAIL One of the best Text adventures+ Y
PG053 LARN A superb text adventure game + Y
PG059 LORE OF CONQUEST space trading D&D game
PG062 MENTAL IMAGE 1 Gridrunner invaders & rebounder+
PG063 MORIA Classic adventure now version 5.4! +Y
PG064 NAPOLEONIC WAR SIMULATOR A strategy game+
PG065 NESTOR CARD GAME Good cards game! +
PG068 NO MANS LAND Hi tech war game-shoot em up. +Y
PG070 PETER'S QUEST Rescue the maiden platform!+
PG071 POM POM GUNNER Like beach-head on the 64+Y
PG072 PROPERTY MARKET Become a millionaire !!!
PG073 RAPHAELS REVENGE Turtle game in SEUCK!+
PG074 RETURN TO EARTH Elite space trading game! +Y
PG076 SEVEN TILES Speedball type game-MEGA!
PG079 SEALANCE A submarine strategy game +Y
PG085 STARFLEET Nice game done in SEUCK!+
PG094 TRAIN CONSTRUCTION KIT make own tracks+Y
PG101 THE INSIDERS CLUB Stocks & shares game
PG121 A500+ GAMES PACK 21 games to run on a plus+Y
PG124 TOTAL WAR Great new risk type game,ok plus!+
PG127 AIRMANIA Super platform game from Addware + Y
PG128 CHEAT WORKS Stacks of new cheats.
PG129 PUGGLES Brilliant Q*Bert game!
PG131 ATLANTIS A nice looking strategy game!+
PG138 BATTLE OF BRITAIN & WAR strategy War games!
PG139 DUNGEONS OF MADROJ Excellent D&D game+Y
PG140 MIND GAMES Stacks of fun with this!
PG149 A NIGHT AT THE TOWN Witty text adventure!+
PG153 WAR very good strategy/arcade game+Y
PG154 NUMPTY & ALIEN INVADERS Manic miner type game
PG158 PORK A PORK Pop the balloons & stop the foxes+
PG159 MR BRICK Great mario type collect coins game!
PG164 GAME TAMER 2.3 joystick tester & 298 cheats!+
PG165 SOLID SQUAD Nice little driving game!
PG167 SERENE III From the author of Raid!!!+
PG168 WHATSITSNAME Great new puzzle game just in.
PG174 AMOS CRICKET Shareware cricket game,1 or 2plr+
PG175 SPACETRAX 2 player shoot each other up game+Y
PG178 MENTAL IMAGE 2 Three Excellent new games +
PG179 BLOB A tricky game written in ShootEmup kit+
PG180 SECTOR 1 A nice game similar to Alien Breed+
PG181 STRIKEBALL Baseball type game done in Amos +Y
PG182 ETHOS Simple graphical adventure Sinbad style+Y
PG183 CATACOOMBS great D&D style game. VG.GFX +Y
PG184 FATAL MISSION Very good Shootemup game +
PG185 ARAZMAX Similar to the game Microbes. Good +
PG189 SPACE RESCUE Super scramble like shoot em up!+
PG190 TOP SECRET An exellent quality platform game!+
PG191 ACT OF WAR New space strategy game! +Y
PG194 INTRUDER ALERT Very good strategy game!
PG199 CASHFRUIT Nice fruit machine game! +Y
PG200 ALL ROUNDER CRICKET New cricket game!+Y
PG202/3 IRON CLADS Good strategic war game!(2)Y
PG204 THRALLBOUND Text adventure with graphics!+Y
PG205 SOCCER CARDS Football managing game!+Y
PG214 LEGEND OF LOTHIAN Superb Ultima type game!!+Y
PG218/9 CLASH OF THE EMPIRES Super strategy!+ Y
PG220 MICROMARKET V1.1 Good stock shares game! +Y
PG226 3D GAMES 3 games done in 3d construction+Y
PG242 MR & MRS Great platform adventure game! +Y
PG247 PICTURE TILES Nice picture puzzle game + Y
PG256 KINGDOM AT WAR Nice strategy war game!+Y
PG256 LCD DREAMS 4 small LCD games! +Y
PG257 THE FUNHOUSE Enigma,Thunderman & a slide!+Y
PG258 AGA TETRIS 1200 tetris game & more! Y
PG259 PICTURE PUZZLE Solve picture jigsaws!+Y
PG260/1 18TH HOLE A nice golf game! (2) +Y
PG262 AGA CHESS Needs 4mg of ram to play! AGA ONLY.
PG264 SOLITAIRE SAMPLER Nice new game! +Y
PG265 WIBBLE WORLD GIDDY Fab platform game! +Y
PG266 BOX ADVENTURE Nice shareware adventure+Y
PG267 SLAMBALL V1.1 Futuristic Management sim! +Y
PG268 SLIDE SQUARES Nice sliding puzzles. +Y
PG269 GUSH This is a pipeline type game! +Y
PG270 THEY CAME FROM OUTER SPACE invaders+Y

ASSASSINS GAMES PACKS!

The best selection of PD games ever assembled anywhere now all autoboot on A1200! (though not all games will run)Something for everyone!

ASI 1 Tanx, Rollerpede, Avatris Amigoids etc!+
ASI 2 Invaders,Bally 2,Missile command etc!+Y
ASI 3 Megaball & Drip Superb gamepack! +Y
ASI 4 Frogger Go Moku,Cracker Jumpy etc!+
ASI 5 Raid, Go Looly & Retaliator+Y
ASI 6 Pacman Downhillchallenge Welltrix etc!+
ASI 7 Moonbase, Trix,Nightworks Clauderunner!+
ASI 8 Airace2,Hball,Snakepit & Numbertumbler!+Y
ASI 9 Features Battle pong & Blizzard! + Y
ASI 10 Escape, Pipeline, Pickout & Sys!+
ASI 11 Dad, Connex,Reversi Towers & Trippin+
ASI 12 Llamatron, Car, Powerpong, XFI, Fab!!+
ASI 13 Twintris, Squamble,Block II,Ball etc!+
ASI 14 ChinaChallenge2 & Amiga Columns!+Y
ASI 15 Battlecars Lettrix & Mambamove!Y
ASI 16 Wastelands, Mission X,Delemna,Pacman +Y
ASI 17 Tomcat, Defenda, Jetman Bugblaster+ Y
ASI 18 Henry in Panic Skyflyer Omega race!+
ASI 19 Growth,FranticFreddy,Biplane & more!+NOT600
ASI 20 Microbes Hollywood trivia Coin drop +Y
ASI 21 Zeus Tettrix Battlements & Dragonflies+Y
ASI 22 Lemmingoids,Wizzys quest Duel Mouthman+Y
ASI 23 Quick money,BIP,Interferon Arcadia+
ASI 24 Revenge of camels Dux Croak 3dmaze etc!+Y
ASI 25 Mr Brick,Copper,hemeroids,E Type+Y
ASI 26 Superpacman 92 Smashtv Ashido System 4etc+
ASI 27 Addictive card games. Really good!+Y
ASI 28 Doody, DrMario, Invaders2, Madbomber2+
ASI 29 DOG, Rome, Nova, B-Bal, Atax, Quadrix+Y
ASI 30 Bounce & Blast, Total Fire Tank attack!+Y
ASI 31 Arazmaz,Crazy pipe, revolution etc!+ Y
ASI 32 Blob, Sector one & Firefighter! +Y
ASI 33 Hyperball & War! 2 good games+Y
ASI 34 Trailblazer, Yelp, Qbic Rushour! +Y
ASI 35 Poing,Snakepit,Cybernetix Jump n roll!+Y
ASI 36 Mother lode, Wonderland, Kong Tactix!+Y
ASI 37 Klaktris, Ghostship, Paccer etc!+Y
ASI 38 One on One,Baldy,Skyflyer2,Transplant!Y
ASI 39 Lots of card games on this disk! +Y
ASI 40 Disk full of sliding puzzle games!+Y
ASI 41 Pacman deluxe, Hellzone Leap II etc+
ASI 42 Galaga, Intuder alert Dogs in space!+
ASI 43 Interlock Roulette Octothello etc!+Y
ASI 44 Nibbler,Mouse Impossible,Roll on etc+Y
ASI 45 Dris,Paccheese,B-Castle Teserae etc+Y
ASI 46 Amiga Q, City,Checkers, Ouch etc! + Y
ASI 47 Elevation, Furnyre,Crave,Arena! + Y
ASI 48 Point to point,Psycho santa etc! +Y
ASI 49 Deathbringer in space Sue 1+2 etc!+Y
ASI 50 Euphorion,Roach Motel,Balders grove! +Y
ASI 51 Lamers, Fighting Warrior Shapes! +Y
ASI 52 Rockslide, Mouthman, & Nu! +
ASI 53 Venus Invaders,Mastermind etc! + Y
ASI 54 Serene,Serene II & Car Wars! + Y
ASI 55 Cli-tris, Pacatac & Asteroids! + Y
ASI 56 Stormeagle, Extreme Violence & Tiles!+Y
ASI 57 Poo-poo Dominoes Dizzy diamonds Squirm+Y
ASI 58 Super raid 4 Magnatron & Maiessae!+Y
ASI 59 Turbo thrust GX200 & Leadings! +Y
ASI 60 Pipe master2 Alien Hunter & Checkers! +Y
ASI 61 Rattlesnake Running Chaser Scud blaster+Y
ASI 62 Pipeline2 Mazeman & Up and Down ! +Y
ASI 63 Nautilus Frenzy & Drive In!! +Y
ASI 64 Oblivion(fab!) Breakout con kit etc!+Y
ASI 65 Paranoids Chess Word Puzzle Word search+Y
ASI 66 Cow wars Asmastermind & Asokoban! +Y
ASI 67 Siege of the Beast,E Type II & Vektor!+Y
ASI 68 Demolition Mission,Bounder & Atoms!+Y
ASI 69 Klondike,Celestial Apoker Bridge etc!+Y
ASI 70 Digital Tetris, Wangle & Tetris pro!+Y
ASI 71 Numerix, Battleships & Vs Tanks! +Y
ASI 72 Escape pre, Boulderdash(not 1200) Carl!+Y
ASI 73 Lexess, Concentration & Challenger!+Y
ASI 74 Crazy pipes II,Bombjacky & Chute! +Y
ASI 75 Double-squares Colours & Diamond thief+Y
ASI 76 Gnu Chess, Cubus & Gerbl +Y
ASI 77 Balloonacy, Cliff hanger & Descender! +Y
ASI 78 Little Boulder, Headgames Fruit Panic! + Y
ASI 79 Gray Attack, Vector Storm & Atoms! +Y
ASI 80 Army Miner Flip It,Golf The Gallows etc +Y
ASI 81 Amos Defence, Thunder Tron & Gergundula! +Y
ASI 82 Artillerys Shuttle run & Arcade Volleyball+Y
ASI 83 Loadsamoney, Pong & Spider(cards)! +Y
ASI 84 Enigma, Allahoo & Zerberk! +Y
ASI 85 Paradox pre, Matchcards,Rubik & Bagitman! +
ASI 86 Smurfhunt,Lords of Host,Legend of Lothian.+Y
ASI 87 Aztec Challenge,Jonus Fullstrand & Landmines+
ASI 88 Defender, Relayer & Mosaic! +Y
ASI 89 Megaball 2.1, X fire and Cluedo!+Y
ASI 90 Flashbier, Starlans & Minefield! +Y
ASI 91 Roton, Matrix & Spectrum! +Y
ASI 92 Bill, Oblidox, & Solitaire Sampler! +Y
ASI 93 Smash bang wallop, Mr Munk & Alien bash!+
ASI 94 Super skoda challenge,Merchamoid & Giddy! +
ASI 95 Premier pics,Tangle,Bop & Flop & Super league man+
ASI 96 Dungeon Flipper,Backgammon Tumble tots Rasterbike+
ASI 97 Bunnyblast,Mutants from Mars, New stubb city!+Y
ASI 98 Skychase The Phone company & Nestor cards! +Y
ASI 99 Grbit, Paranemmot, Space Wars & Org! +Y
ASI 100 Bloadrunner, Patience & Monaco! +Y
ASI 101 Meltdown, Paragon Boomerang & Rothello! +Y
ASI 102 Fruit Salad, Rebound & Pacsim! +Y
ASI 103 The Lost Occrest, Wacky wabbit & Megarace!+Y

Assassins game packs made up in any numbers you require: eg ASI 1-35 only 33.95 inc P&P!!!
FUNPACK GAMES PACK 1-35 only 33.95 inc P&P!!!
(most run on Amiga 1200!)

FUNPACK GAMES

FUN 01 Towers, Tron & Rings of Zon (NOT DOS 2 OR 3)
FUN 02 Raps, Car & Drip on this disk! +Y
FUN 03 Videopoker, Sys & Pipeline! +Y
FUN 04 X-Fire, Headgames & Drivewars! +Y
FUN 05 Roton,Super breakout,Airace & Reversi! +Y
FUN 06 Up & Down,Humartia & Missile Command! +Y
FUN 07 Megaball, China Challenge & ATC! +Y
FUN 08 Lore of Conquest,Montana,Welltrix,Sorry! +Y
FUN 09 Snakepit,Blackjack & Mines! +Y
FUN 10 Frog,Sealance & Billiards.+
FUN 11 Mosaic,Mutants,Spite&Malice,Quattro etc.+Y
FUN 12 Spacewar,Egyptian run,Slotcars,Backgammon +Y
FUN 13 Runnin,Family,Sol,Rollerpede,Tanx etc! +Y
FUN 14 Paranoid,Klondike, Connex etc! +Y
FUN 15 Wordpuzzle, Triangle & Namegame! +Y
FUN 16 Tiles,Newklondike,Paccer,Eternal Rome Flip it+Y
FUN 17 Solitaire,Dominoes,Mambamove & Bally II +Y
FUN 18 Amancala, Llamatron & Rocky.+Y
FUN 19 Copper, Attacks & Diamonds. +Y
FUN 20 Simpsons ,Windmill,Windy Day,Metro Tom games+Y
FUN 21 Puzzler,Cat&Mouse,Retaliator,Raps,Bounce etc+Y
FUN 22 Dog,Amines,Nova,Kim,Crossmaze,Cobra, etc! +Y
FUN 23 Jumper,Nakamoto,Rescue,Boomerang,Mirrorwars+Y
FUN 24 Zeus,Chrome,Matchpatch,Phone,Deathbringer +
FUN 25 Adventure,Boardgames,Bunny,Cards,Puzzles +Y
FUN 26 Tetrix,Kamikazi,Cliffhanger,Trek trivia +Y
FUN 27 Bullrun,Pod,Mr Wobbly,Deluxe Hamburger +
FUN 28 Klaktris,Cybernetix,Nebula & Pipe! +Y
FUN 29 Intruder Alert & Crazy Sue! +
FUN 30 Yelp,Tach,Squamble & System 4! +
FUN 31 Arazmax,Tank,Nu,Battlecars & Orbit 3d +
FUN 32 Wizzys Quest & Spacetrax! + Y
FUN 33 Roulette,Frantic Freddy,Baldy,Othello +
FUN 34 Quickmoney,Nightworks,Superpacman,Bid II +
FUN 35 Search,Deluxe Pacman,Motherlode,MrMunk+Y
FUN 36 Octothello,Galaga,Space Invaders2 etc!+Y
FUN 37 Legend of Lothian & Search I +Y

EDUCATION

PE001/5 EDUCATION SET science programs for age 11+ +Y
PE006 KIDSPAINT Fab little talking colouring book+Y
PE007/8 LEARN & PLAY Maths, spelling etc. 5-10 yrs +Y
PE009 STORYLAND 2 Save toyland from the witch! +Y
PE010 TOTAL CONCEPTS ASTROMOMY Book on disk.+Y
PE011 TOTAL CONCEPTS DINOSAURS Book on a disk+Y
PE013 SIMON & SPACE MATHS Talking maths program
PE014 SPANISH, FRENCH, GERMAN TUTOR+Not 600!
PE015 TREASURE SEARCH find the lost treasure ! +Y
PE016 COLOUR THE ALPHABET learn letters & colours! +Y
PE018 TYPING TUTOR, Superspell Budget & Macalender+Y
PE019 DUNKS DTP A sort of DeskTopPublisher for kids +Y
PE020 MATHS DRILL Good maths disk for the young! +Y
PE021/4 SCIENCE Very good four disk set!+ (4)Y
PE025 FRACTIONS & SILHOUETTES Good maths tutor+ Y
PE026 WW II FACTS Good historical program!+ Y
PE027 AMIGA BEGINNER Learn to use your machine+ Y
PE028 MATHS ADVENTURE Solve questions to progress+Y
PE030/2 DESKTOP GUIDE TO ELECTRONIC MUSIC! +Y
PE033 MATCH WITH HUMPTY Match the objects! + Y
PE034 WORLD GEOGRAPHY Quite useful disk! +Y
PE035 KIDS DISK1 Super to learn reading! +Y
PE036 FIREWORKS ALPHABET Good for kids! +Y
PE037 HOORAY FOR HENRIETTA Superb preview!+Y
PE038 HENRIETTAS BOOK OF SPELLS Fab preview!+Y
PE039 COLOUR IT Exellent little colouring pad!+Y
PE040 HOW THE EARTH BEGAN The full story! +Y
PE041 SINGALONG NURSERY RHYMES Good fun! +Y
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PE043 PICTURES & LETTERS For the very young!+Y

BUSINESS

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PB002/3 ANALYTICALC Superb spreadsheet!+ (2)Y
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PB009 FLEXYBASE DATABASE Address keeper+Y
PB011 MISC BUSINESS Geotime, Grocery list, Calc
PB013 QED Simple & effective text ed+Y
PB014 RIM DATABASE Fully relational !!+Y
PB015 TEXTPLUS V3.00 The BEST Wordprocessor +Y
PB017 VISICALC SPREADSHEET Simple to use+Y
PB019 BUSINESS LETTERS contracts, letters + more+Y
PB020 TEXT ENGINE 4.0 THE LATEST Version !!! +Y
PB021 AMIBASE PRO. Powerful easy to use Dbase +Y
PB022 BBASE IIIv1.3 Latest version of super database+Y
PB023 FORMS REALLY UNLIMITED form creation prog+Y
PB024 LAST WILL & TESTAMENTS Just in case !+Y
PB025 EDWORD Brand new wordpro - V.good +Y
PB026 AGRAPH Superb Program graphing data +Y
PB028 LITTLE OFFICE Intergrated Wpro,Sst,Dbase,Gfx+Y
PB029 ADDRESS PRINT Good label printing program! +Y
PB030 THE MONEY PROGRAM Home accounting! +Y
PB031 EASYCALC A superb new Fast spreadsheet! +Y
PB032 PAY ADVICE Keep record of payslips! +Y
PB033 A BASE A shareware database program! +Y
PB034 ILLINOIS LABELS Super label program!+Y
PB035 BUDGET V1.34 manage personal finances!+
PB036 CHECKBOOK ACCOUNTANT V2.01 superb! +Y

UTILITIES

(Note: "Y" = ok on A1200!)

PU002 A-GENE Good geneology program + Y
PU004a/b A64 EMULATOR NEW VERSION 2.0 (2)
PU005 AMATEUR RADIO 1 interest to radio hams + Y
PU010 ARP 1.3 Amigados requester system!+
PU012 ASI GRAFFIX UTILS graphics convertors etc+Y
PU013 ASI BOOT UTILITIES bootblock utilities + Y
PU015 BIORYTHMS, STARCHART 2 Good programs+ Y
PU021 C-LIGHT RAY TRACER Good program+ Y
PU022 CHEMESTHETICS molecule displayer + Y
PU036 CURSER BASIC COMPILER Just what you need!+
PU037 D-COPY The best PD disk copier & more + Y
PU039 DBW The forerunner to Skulpt 3D !!! + Y
PU048 DYNAMITE FONTS II CutNPaste fontscreens Y
PU049 DYNAMITE FONTS More CutNPaste Fonts Y
PU055 ELECTROCAD DEMO circuit designer +
PU058 FONTS AND RAM MANAGER BIG video fonts+
PU059 FONTS & SURFACES Backdrops & fonts+ Y
PU062 GRAPHICS UTILITIES Various misc. programs+Y
PU063 HAMLAB PRO V2.08Convert VGA PC >IFF/HAM+ Y
PU064 HARDDRIVE UTILS MRBackup & FixDisk & more+Y
PU065 ICONMANIA Program icons & more !+ Y
PU066 ICONS Cramm packed with icons !+ Y
PU067 IMPLODER V4.0 Megacrunching Util+ Y
PU069 JAZZBENCH Alternative Wb for 1.2/3 users.
PU071 JR COMM 1.02 Modem users comms package Y
PU072 METALLION UTILS Font Editors & more utils+ Y
PU073/76 KING JAMES BIBLE Old&New testaments (4)+ Y
PU078 M-CAD Hires design package. Excellent + Y
PU080 MESSY-SID 2 Read/Write PC Files, Brilliant!+ Y
PU083 MORSE PROGRAMS for the radio hams. Y
PU086/7 NORTH C 1.3 (2) Complete C compiler & libs+ Y
PU088 NORTH C 1.3 This is the packed 1 disk version!+Y
PU095 PRINTER DRIVER GENERATOR & new drivers+ Y
PU097 PRINT STUDIO V1.25 Prints pics & text etc + Y
PU108 ROT A simple 3D drawing package.Very popular.+Y
PU109/10 (2 disk) Structured clipart for Ppage + Y
PU112/3 SOMETHING FOR NOTHIN Video Utils&Fonts+ Y
PU115 ST EMULATOR Run Atari ST software !! 2 Drives
PU117 SUPERKILLERS Virus Killers! You need this! +
PU121/2 TV GRAPHICS Dpaint backdrops&Fonts+(2) Y
PU124 ULTIMATE ICONS Iconmaster,Iconlab.+ Y
PU125 ULTRAPAINT v3 A nice paint package!
PU129/30 VIDEO APPLICATIONS Video utilities+ Y
PU136 ZX SPECTRUM EMULATOR Now with sound +
PU139 GRAPHICS CONVERTERS PC>AMigagfx Converter
PU140 LITTLEBENCH File copier & utils Dos2 only
PU143 OPTIUTILS 1 Crammed full ! Get it+ Y
PU144 OPTIUTILS 2 Get this disk too ! + Y
PU149 ELECTRONIC PROTOTYPER Veroboard designer Y
PU152/66 CLIPART SET: 15 Disks of the BEST clipart+Y
PU167 MULTI-PLOT Superb data plotting program ! +
PU169 GELIGNITE FONTS CutNPaste fonts!+
PU172 WORDPOWER Solve Anagrams/Crosswords+ Y
PU174 ASTRO 22 professional astrology now V3.0! +Y
PU175 GELIGNITE FONTS II Excellent IFF fonts+Y
PU176 GELIGNITE FONTS III More of above!!+
PU177/8 BENCHMASTER Windowsbench & Messysid!!
PU180 RICHARD SMEDLEY COMP Vat Checker & more.
PU182 STOCK ANALYST Technical analysis program+Y
PU183 AMYGEN Excellent geneology program+Y
PU184 PROCALC V1.0 Professional calculator.
PU185/8 COSMOPOLITAN FONTS (4) Packed with fonts+Y
PU189 TRONIK VIRUS KILLERS 21 virus killers & docsY
PU191 LANDBUILDER fractal land generator+Y
PU192 SID 2 Get this ! directory util !!! MEGA!+Y
PU197 MOBED 2 Dpaint for Sprites & bobs+Y
PU198 VIDEO WIPES Masks & fades Dpaint 3/4 +Y
PU200 LITTLEBENCH 1.3 Now for 1.3 owners!
PU201 MALICE FONTS Exellent tiny fonts for Dpaint!+Y
PU202 CYCLOPS Weird Plasma/fractal creator ! +Y
PU203 SCOPE 184 utils & clips for Ppage Y
PU204 GATOR GRAPHICS Dpaint tutorial disk.+
PU205 PC TASK PC Emulator Now Version 2 VGA! +Y
PU207 MULTISID Combine SID2 & Multidos(PC>AMIGA)+Y
PU208 ASI HANDYTOOLS 3 mega compilation of utils Y
PU209 FRED FISH CATALOGUE contains FISH 1 - 880 +Y
PU210 PCQ PASCAL Latest version of this pascal compiler+
PU211 AMIGA PUNT A horse race predicting program!+Y
PU212 PERM CHECK PLUS a pools prediction prog Y
PU213 RACE RATER Another horse racing program!! +Y
PU215 CAPTIONATOR Superb shareware video titling!+Y
PU219 WBHACKS+ collection of hacks for + owners+ Y
PU221-225 8 COLOR ICONS Hundreds of new icons +Y
PU226/7 C-EYES FONTS For use in Dpaint, WB, etc.(2)+Y
PU229 JPEG 24 bit graphics compression util disk! +Y
PU230 MORE PRINTER DRIVERS new printer drivers!+Y
PU231/5 PAGESTREAM FONTS 5 disks super fonts!+ (5)Y
PU236/7 SCOPE197/8 Adobe type fonts, 2 disks full! +Y
PU238/9 M.O.R.C. Mouse operated rune caster,oracle !+
PU240 FREECOPY V1.4 powerful disk copying program!+Y
PU241 CALORIE BASE Useful for people on a diet!+Y
PU243 ASPICE Circuit analysis program!+Y
PU244 BON APPETIT This is a recipe database program!+Y
PU245/256 C MANUAL Latest version on 12 disks! (12) +Y
PU257/61 PAGESTREAM FONTS 2nd set of fonts!+Y
PU262 RICHARD SMEDLEY COMP II Mortgages etc!+Y
PU263 LYAPUNOV Fabulous & unusual fractals!!+Y
PU264/8 OUTLINE FONTS For Pro pagev3 ONLY!!+Y
PU272 GOLF RECORDER Database for golf scores!+ Y
PU273 PC<>AMIGASimilar to Messysid, + docs!+ Y
PU274 TRONICAD V1.0 Electronic circuit design!+Y
PU278 GELIGNITE FONTS IV Yes more iff fonts!
PU279 V MORPH V2.30 Yes a PD morphing prog!!+ Y
PU280 POOLS WIZARD Pools prediction,save disabled+Y
PU282 ASI MULTIVISION 2 Imagelab,Wasp & more,super+Y
PU283 CYCLING MILEAGE RECORDER Useful! +Y
PU284 DART MACHINE Dart score recorder! +
PU285 WORKBENCH 3 BACKGROUNDS, 1200 ONLY!
PU286 INSCRIPT Program for Video titling! +Y
PU287 NUMPAD Numeric keypad emulation!(600 ONLY)
PU288 ENGINEERS KIT Test your Amiga system! +Y
PU289 AUDIO ANIMATION STUDIO Create your own! +Y
PU291 1200 WORKBENCH HACKS Useful utils! Y
PU292 1200 UTILS1 Gif & PCX datatypes etc!A must!Y
PU293/317 25 disks of Ham radio software! (25)+Y
PU318 POWER UTILS Utils written in Can Do! +Y
PU319/23 OUTLINE FONTS For Pro page 2.1 or 3!(5)+Y
PU324 WINEMAKER Database for winemakers! +Y
PU325 EZASM LAZI & A68K Programmers disk! +
PU326 PLOTTER Plots two dimensional functions!+Y
PU327/8 X BENCH all round replacement! (2) +
PU329 BCFORTRAN77 Programmers development system+
PU330 SLEEPLESS NIGHTS Utils useful for 1200!Y
PU331/43 COLOUR FONTS(ASSIGNABLE)(13) +Y
PU344 EXEL Nice Cardfile type database program! +Y
PU345 AMOS PRINTER Print screen from within Amos! +Y
PU346 EXOTIC RIPPER V2.10 Soundtracker ripper! +Y
PU347 RAVE GENERATOR Plug in a sampler(1mg chip)+Y
PU348 SPEED UTILS Fixdisk Headclean Snoop & more!+Y
PU349 NCOMM V3.00 The latest version comms disk! +Y
PU350 KINGFISHER Fish database 1-840 (packed) +Y
PU351 ASI FIX DISK Get old programs running on dos2/3+Y
PU352 HP 550C & Cannon Bubblejet printer drivers! +Y
PU353 TAB MASTER Music to Guitar translator prog! +Y
PU354 ASTRONOMY v2 calculate info on solar system! +Y
PU355 SUPERDARK Superb & unusual screen blanker! +Y
PU356 FONTFARM Contains 55 large & Small fonts! +Y
PU357 CANON PRINT STUDIO A must for BJ owners! +Y
PU358 PPAGE TEMPLATES,GENIES etc. Very useful!+Y
PU359 PRO PAGE HELP DISK Extremely useful disk!+Y
PU360 WINDBLEND Super effects but 1200 only! Y

ANIMATIONS

PA039 ERIC-S AMY VS WALKER Cute & sexy! 1.5M Y
PA040 ERIC-S BATMAN vs JOKER Very funny!!!+Y
PA042 ERIC-S COYOTE STRIKES BACK 1mg too! +
PA043 ERIC-S MORE AEROTOONS Very witty !!!+ Y
PA045 ERIC-S STEALTHY II Mig-29 vs Stealthy !+Y
PA053/4 LIGHT CYCLES (2) Tron animation+
PA060 NEWTONS CRADLE RT animation +Y
PA065/68 REAL 3D (4) Superb of the program+
PA070 SHUTTLECOCK ANIM 2 shuttles+satellite+Y
PA072 THE JUGGLER A classic amiga demo!+ Y
PA074 THE WALKER vs The Helicopter - Mega !+ Y
PA075 THE WALKER vs A2000 A classic ! + Y
PA086 FRACTAL ANIMATION full screen low flying anim+Y
PA091/3 GAS TURBINE, STEAM & PETROL ENGINE (3)+Y
PA094 AMY JOGS,WALKS & SNEEZES by E Schwartz! +Y
PA095 HOW TO RUN INTO A WALL by Eric Schwartz! +Y
PA099 ATF AGILITY new ES anim, very witty as usual+Y
PA100 VTOL CONTEST Check out this new ES anim ! +Y
PA101 DOLPHIN DREAMS Great Dolphin anim! + Y
PA103/4 KINGFISHER 2 Superb bird animations!+ Y
PA106/7 THE JOURNEY Fab fractal pics & anims(2)+Y
PA109 SATURN ORBIT Ray traced flight around Saturn+Y
PA118 3 SCHWARTZ Skydive,Soft landing & bomber! +Y
PA119 STEAM ANIMATION V2.0 Now with sound! +Y
PA120 TWO STROKE PETROL ENGINE Super anim+Y
PA122/3 THUNDERBIRDS ANIM Nice animation! (2)+Y
PA124 ANIM COMP 10 mini animations compilation! +Y
PA126/7 PHOTONIC DREAMS Room & Star animations! +Y
PA131/40 10 disk set Steve Packer anims!(1200 ONLY)
PA141 STIRLING II ENGINE Another fab engine anim!+Y
PA142 NIGHTBREED AGA FRACTAL FLIGHT Colourful! Y
PA143 XMAS ANIMATION Amusing animation! +Y

AGATRON(Ok 1200!)

AGA01 RED LOTUS Spinning down the road. Fantastic !+
AGA02 JET FIGHTER landing on a runway, basic anim +
AGA03 STAR TREK - Shuttle fly past - Great ! 1m +
AGA04 KLINGON CRUISER Flying around your screen !+
AGA05 STAR TREK KLINGON fires torpedoes 1m +
AGA06 LOGO, plus a great star wars fly by animation.+
AGA07 STAR WARS FIGHTER doing loops etc 1m +
AGA08 STAR WARS, a great anim from the movie (CLI)+
AGA09 STAR WARS - Fighter fly by, impressive 1m +
AGA10 STAR TREK - Enterprise in dry dock. Incredible+
AGA11 TRON - Tank v Deactivator. Good vectors +
AGA12 TRON ANIMATION - Not one of the best +
AGA13 ROBO 1 A nice ray traced robot waving 1m +
AGA14 STAR TREK Workbee & Reliant. 3 shots +
AGA15 LOTUS CAR, Billiards, & Jet Fighter animations! +
AGA16 STAR TREK Various anims from the star trek game.+
AGA17 STAR TREK TWOK animation Short but okay +
AGA18 STAR TREK - Enterprise fly by. Short anim +
AGA19 BOND ANIM - Copter plus a car, not too amazing+
AGA20 Huey 2 A helicopter leaving a landing pad.+
AGA21 ENTERPRISE DOCKING WITH SPACE STATION+
AGA22 ENTERPRISE APPROCHING stunning anim ! 1M +
AGA23 FLEET MANOEVRE Stunning animation! 1m +
AGA24 KULI PEN animation & Ping pong. Great! 1m +
AGA25 THE RUN , a suberb car chase 1mg +
AGA26 SHIP ROCKING at sea,enterprise leaves dock+
AGA27 BOOK OPENING Nice anim of a book opening.+
AGA28 SHUTTLE & ENTERPRISE Fab anim by Richter+
AGA29 MILLENIUM FALCON The ship being chased -1M+
AGA30 HYPERSPACE animation & Landing animation 1m +
AGA31 PORSCHE anim rising out of table 1 mg. +
AGA32 SPACE - Space probe flying away 1m +
AGA33 PROBE Bird of prey animation & Kingonhit! 1m+
AGA34 SPACE OFFICE Star trek anim, a little short +
AGA35 SPACE PROBE, great anim of probe zooming off!+
AGA36 BIRD OF PREY, loop the loop animation 1m +
AGA37 TOBIAS GOES KNACKERS - Check this out ! 1m +
AGA38 TOTALLY WICKED ! Shuttle & Enterprise (2 MEG)
AGA39/53 AGATRON SPECIAL! Yes, a 15 disk anim!+Y
AGA54/62 AGATRON SPECIAL! a 9 disk anim, fans only+Y

POWERANIMS

PP001/2 ANTI LEMMINGS (2) This is Brilliant! 2M
PP003 AT THE MOVIES Cute anim of Amy squirrel 1.5M+Y
PP004/7 AUTOMATED LIGHT (4) Battlestar galactica! 3M
PP008/10 BUZZED (3) Great anim of wasp crashing! 2M
PP011/12 DATING GAME (2) Very witty!, Get it. 3.5M!
PP016 GULF WAR Another ES production! Good 2M! Y
PP018/20 LOST IN SPACE (3) Good cult TV anim! 2M
PP021/4 LANDING (4)Tobias Richter poweranim 4M!
PP025/27 STATION AT KHARN (3) Incredible 2M demo Y
PP036/7 WALKER DEMO (2) A 2mg version of a classic!
PP040/43 AT THE MOVIES II (4) Hilarious ! 1mg>3mg
PP044/45 AMY V WALKER II (2) Another witty ES demo 3M
PP046 SWEET REVENGE Coyote vs Roadrunner ! 1.5mg+Y
PP050 UNSPORTING Wicked aerotoon by Schwartz+ 2M Y
PP051/2 CHARLY CAT Super Shwartzlike cartoon! 2mg.Y
PP053/4 CHARLY CAT AT THE BEACH 2nd fab anim 2mg!Y
PP057/9 CHARLY CAT CATCHES A CANARY Fab! 3MG.
PP060/3 CHARLY CAT MOUSTERMIND Great! 3.5MG.
PP064 DUNCAN DUNG BEETLE Unusual 2mg animation! Y
PP065/6 CHARLY CAT SNOWJOKE Latest anim 2mg.+ Y
PP067/9 SPEED LIMIT 3mg motorcycle race! + Y (3)
PP070/1 LEMMINGS REVENGE Very amusing anim! 2mg Y
PP074/6 G.I. SPY 3mg anim from charlie cat author! (3)
PP077/84 THE HAUNTED Tremendous animation,3mg(8)
PP085/7 THE AD Strange swartzlike animation! 3mg (3)
PP088/9 SPORTING DOO DOO Nice new animation! 2mg(2)
PP090/1 ROADHOG ANIM Very funny 2mg animation!(2)Y
PP091/2 SPAR TREK Amusing animation. 2meg (2)Y
PP093/98 DUNK'S BACK New Duncan anim,5 disks 4 mg!
PP099/100 AT THE FLIX Charlie cat again! (2) 2mg
PP101/4 QUALITY TIME Superb Shwartz 5mg anim (4)!
PP105/6 SATELITTES REVENGE Good anim!(2) 2M
PP107 DAMBUSTERS Lancaster bomber fun! 2M.
PP108/10 CHARLY CAT IN SICKNESS & HEALTH!(3)3mg!
PP111/2 BUGSBUNNY & SPACEMEN Action packed!(2)2mgY
PP113/4 CALVIN & HOBBES Super animation!(2) 3mg.
PP115/6 SPAR TREK3 BATTLESTATIONS Fun! 2mg (2)
PP117/8 PRANK ON FURBALL Cat has a pizza! 2mg (2)

DEMOS

PD002 ALARM MEGADEMO Acid type video demo!+Y
PD005 AMOS 3D DEMO Shows some great effects!+Y
PD018 CHAOS ROCK Fab light show with fractals!+
PD023/25 ALCATRAZ MEGADEMO Huge, on 3 disks!+
PD066 PHENOMENA ECES light sourced vectors! +
PD068 PHENOMENA ENIGMA Absolutely brilliant! +Y
PD076 PLASMUTEX Good plasma & great music +
PD077 PMC ALPHA OMEGA Superb vector demo+
PD093 SCOOPEX CHROMIUM Superb demo.+Y
PD094 SCOOPEX MENTAL HANGOVER A classic+
PD097 SILENTS GLOBAL TRASH Incredible!!+
PD121 DIVINA TECHNO FRIGHT Unusual! +
PD124 ANDROMEDA DECAYING PARADISE Good! +
PD130/34 ALCATRAZ ODDESSY Awesome!! Ok on 500+!
PD142 FINAL CONFESSION Music & Plasma effects!+Y
PD154 DECAY GET FROGGED Superb quality! +Y
PD159 ANARCHY IN THE KITCHEN Some good FX Fab!+
PD164 DESIRE MENACE Good Psycho rave demo +
PD165 DARK DEMON Mega new demo ... get it+Y
PD169 BIG BANG Excellent spacey-type demo+
PD170 PIECE OF MIND Good 3D vector effects. +Y
PD171/2 SILENTS EXPOSE(2) Incredible Get it !+Y
PD177/8 TRSI TIME ZONE New, some good effects!+Y
PD181 CINEMORPH Fab morphing of 4 faces! 1mbchip!+Y
PD182 SPACEBALL Absolutely brill,needs 1meg chip!+Y
PD183 DIGITAL LETHAL EXIT Good vectors demo! +Y
PD184 ANDROMEDA MINDRIOT Very good vector demo! Y
PD185/6 ANDROMEDA MIRROR Fab Music & Graphics!+Y
PD187 HOY AGA DEMO 1st 1200 demo,a must! 1200 ONLY
PD188 SANITY WORLD OF COMMODORE Super demo+Y
PD189/90 SILENTS DEMON DOWNLOAD Fab demo! (2) +Y
PD194/6 DETONATION 3 disk pic & anim set!(3)+Y
PD197 MOBIL DESTINATION UNKNOWN by Spaceballs+Y
PD199 TRSI MISERY DENTRO Unusual effects! +
PD200 PHOENIX DEMO inc Flashy rave demo!+Y
PD201 1200 INTROS Yes, some AGA intros at last! Y
PD202 TECHNOLOGICAL DEATH Freaky techno rave +Y
PD205 FAIRLIGHT ILLUSION Good demo 1mg chip! +Y
PD206 MELON HOW TO SKIN A CAT Nice effects! +Y
PD207 NEMAL BOUNDLESS VOID good effects & music+

MUSIC DISKS

PM001 100 GREATEST 64 TUNES 100 fab 64 tunes!+
PM010 AMEGA PARTY WINNERS Four WICKED songs+ Y
PM016 BEATLES SONIX Nice music +Y
PM018 BEATMASTER I LOVE TECHNOLOGY Rave ! +Y
PM019 BRUNO's MUSIC BOX II Superb jazz funk music +Y
PM020/21 BRUNOS MUSIC BOX III Jazzfunk. Get it ! +Y
PM026 DEPECHE MODE MUSIC Soundtrackered tunes! +Y
PM027 D-MOB MUSIC 3 House music remix, good! +
PM030/34 DIGITAL CONCERTs 2-6 Excellent houserdance
PM052 KEFRENS JUKEBOX Lovely music & juke box! +Y
PM058 MAG FIELDS CHIP FESTIVAL Full of chip music!+Y
PM059 MANIACS OF NOISE This is brilliant!+
PM065 PHENOMENA MUSIC DREAMS 1 20 fab songs +
PM073 SILENTS FULL POWER House it up music! +
PM074 SOUND OF SILENTS Jut get this its mega!
PM092 PIANO TUNES Nine piano songs- good + Y
PM096 STAIRWAY TO HEAVEN Rendition of the song+Y
PM100/103 MANIC RAVES II Fantastic rave stuff(4) !
PM104 500 THINGS COMEBACK 4 great rave type tracks
PM105/6 KEFRENS MEGAMIX Fabulous dance music+
PM112 TECHOMANIA II 8 essential hardcore tunes+
PM113 PROTON GATES OF TIME 6 good pieces of music
PM114 UPROAR SPLIT BEAVER MIX rave megamix +Y
PM117 MUZAK OF THE WORLD original Amiga music! +Y
PM120 IDEAL MODE AEROSOL EP Go raving mad +
PM121 NIGHTBREED MUSIC DEMO 8 Rave music +Y
PM122/4 PLAYSID 2 (3) You must get this !!!! +Y
PM125 PLAYSID inc.RobHubbard, ManiacsOfNoise + Y
PM134/5 SOUNDS OF SCIENCE (2) Absolutely Brilliant
PM137 KEFRENS MEGAMIX II Very good !! dance music
PM154 PULSE Yes, pulsating rave music again!! +Y
PM155 VINE G-RAVE 5 more good rave tracks!!! +Y
PM161 CYBERNETIX 19 songs packed on 1 disk!+
PM162 MORE MED TUNES Fab tunes by Alex Starrex
PM163 OCTASTUFF Some good 8 track tunes! + Y
PM164 OCTAROCK 3D More 8 track & 3d graphics!+Y
PM167/8 JESUS ON ES Crazy rave music demo! +(2)
PM169 BRAINSTORM MUSICLAND Nice music disk!
PM170/2 LUNATICS INFINITE DREAMS Great music(3)
PM173 CDTV MUSIC Super graphics & sound. 8 tracks!
PM176 TUNE UP THE BASE Killer Rave music disk! +Y
PM177/8 LEGALISE IT 2 Some really cool music! (2) +
PM179 PLAYSID V2.2 More old 64 style music! +Y
PM180 HARDLINE BLACK ENERGY Nice music disk! +Y
PM181/2 PASTEL VANILLA Super cool amiga music! (2)
PM185 ASI MUSIC VOL1 4 large songs with hifi graphics
PM186 ASI MUSIC VOL2 7 songs with hifi graphics! +Y
PM187 STATIC BYTES KUGLEPOLEN 7jazz+rock tunes

CLASSICAL MUSIC

PM012 AMIGADEUS CLASSICAL Eine Kleiner etc. + Y
PM022/23 CLASSICAL MUSIC Bach, Handel etc +Y
PM035 DIGITAL DEBUSSY Fab Rob Baxter conversions
PM036 DIGITAL DEBUSSYII classic Debussy music!+ Y
PM070 RHAPSODY IN BLUE tracked by Rob Baxter! 1M
PM082a/82b VIVALDI - FOUR SEASONS (2) V.Good !+ Y
PM090/91MOZART HORNCONCERTOS need 1mg chip
PM130/2 BACH BRANDENBURG CONCERTOS 1 to 6
PM150 DESKTOP HARPSICHORD RECITAL Classics!
PM165/6 NUTCRACKER SUITE Super rendition!+ Y
PM174 CLASSIC WORKS Grieg & Bach classics! +Y
PM175 SONIX MUSIC Some nice scores here!(loadwb)
PM183 CLASSIX GOLD Bach Toccata & Fugue (1mg chip)
PM184 MOZART FLUTE CONCERTOS 1mg chip! +Y

SLIDESHOWS

PS002 ADVANCE HAM Really stunning !+ Y
PS008 AIRCRAFT SLIDE Pics of fighter aircraft!+Y
PS009 ASTRONOMY SLIDE very impressive!+Y
PS013 BORN TO BE FREE wild animals +Y
PS033 GERMAN RAY TRACE Superb See these !+
PS039 INVISIBLE WORLD yuch, bed bugs etc!+
PS045 KELLY S/S Some quality HAM pictures.+Y
PS056 NEWTEK DYNAMIC HAM 640x512 4096 color pics
PS062 NW DYNAMIC HAM Nik Williams Superb quality
PS072 SUPER HAM CARS This is a must-Mega!+ Y
PS086 SONIC 5 Superb D-HAM 4096 colour pics+
PS090 FRACTALGEN Incredible fractals etc +Y
PS101 ANALOGUE SLIDE Ray traced space pics!+Y
PS103 DYNAMIC HIRES 2, 4 fantastic quality pictures!+
PS107 ALCATRAZ MUSEUM Superb pictures! +
PS115 THE GATHERING 93 Stunning pictures here! +Y
PS117/8 NIGHTBREED AGA SLIDESHOW Super(2)1200
PS119 CYNOSTIC SLIDESHOW Superb pictures!1200 only
PS120 KEITH RHODES SLIDE 3 fantasy pics!1200 only Y

MUSIC UTILS

PT001 ALGORYTHMS Create weird midi tunes
PT002 ART OF MED Excellent !+ Y
PT005 CASIO CZ EDITOR 250 patches ! +
PT009 K1 IFF SAMPLES Fabulous samples +
PT011 KAWAI K1 editor for patch changes!
PT012 KAWAI K4 editor as above!
PT013 MED 3.2 Excellent music seq. + Y
PT015 MIDI DISK Various midi stuff +
PT020 ST-01 - ST-10 Samples--Ring for details
PT021 SOUNDTRACKER 2.6 Excellent, ok plus!+Y
PT025/6/7/8 ST-90-93 SAMPLES Studio quality+ Y
PT029 YAMAHA DX7 VOICE FILER for DX7 synths!
PT030 YAMAHA DX7 VOICE SORTER for the above !
PT031/2/3 ST-87 - 89 3 disks full !+Y
PT034/5 ST-97 & 98 More samples !+Y
PT038 YAMAHA DX100,TX81Z, DX27,DX11 & FB01 editor
PT040 OCTAMED V2 8 channel MED sequencer!+
PT041 NOISEPLAYER 4.0 Multitasking module player+
PT042 START IFF SAMPLES Superb ! Get this disk!+Y
PT043/5 HOUSE SAMPLES 3 disks full of house samples
PT046 AUDIO MAGIC3 Super trackers disk, ok on 1200
PT047 AUDIO MAGIC4 More Superb music programs! +
PT048/52 MODULES 5 disks of large music modules!+Y
PT053/57 METAL MODULES 5 disks heavy rock/metal!
PT058/62 BREAK BEATS 5 disks of good drum samples
PT063/67 VOCALS 5 disks of super vocal samples!+Y
PT068/70 DRUMKITS 3 disks of high quality drums!+Y
PT071/73 KORG SAMPLES 3 disks of keyboard sounds
PT074/76 PURE SAMPLES Lots of assorted samples!+Y
PT077 SAMPLE FACTORY Disk full of sound effects!+Y
PT078 CHIPMAN SAMPLES over 70 samples here!+Y

AMOS PD

APD036 AMOS UPATER LATEST VERSION v1.36 + Y
APD237 SHAPES Excellent kids game !+Y
APD257 CASSETTE LABELLER + MIXED SOURCE+Y
APD271 WIZARDS DOMAIN graphical adventure+Y
APD341 TOTALLY AMOS Good read for programmers
APD347 NOTEBOOK & SHOPPING LIST Easy to use
APD363 FAMILY HISTORY DATABASE Latest version
APD373 COMPILER 1.36 UPDATE. LATEST compiler
APD382 AMOS HANGMAN Good version of the game!
APD385 CHASER,RATTLESNAKE & MAZEMAN Games
APD431 KARATE WORM II Latest version of game! +Y
APD442 SLIDESHOW CONSTRUCTION SET V2! +Y
APD451 NOODY,S PLAYTIME Educational demo! +Y
APD458 TOP OF THE LEAGUE Football manager!+Y
APD466 AMOS PRO UPDATER V1.12 Just in!!! +Y

NEW!

PG272 MAYHEM 2 Multiplayer manic maze game! +Y
PG273 MUGSIE Money making gangster adventure!+Y
PG274 ROULETTE & PUNTO 2 nice games (not 1.3)+Y
PG275 BLITZ GAMES Worm Buzzbar Speed+ Insectoids
PG276 SKIDMARKS Amazing driving game,very fast!+Y
PG277 ZOMBIE APOCALYPE & DEFENDER 2 exellent ga
PG278 BILLY BURGLAR Just try & escape the spotlight
PG279/80 OLYMPIAD 2 disk Lemming olympic events(2)
PG281 CAVEFLIGHT Simple dodge the obstacles game
PE044/5 AMERICAN FOOTBALL Learn the game(2)+Y
PE046 TOTAL CONCEPTS DINOS 3 PREVIEW Superb
PU361 XPK COMPRESSION UTILS compression progs
PU362 STARVIEW Gives view of star for given time etc
PU363 FORCASTER Horse racing prediction program!
PU364 COURSE FORM Simple horse racing prediction
PU365 ATTIC & BLITT Useful to C programmers! +Y
PU366 WB2 UTILS Full of obscure but useful utils! +Y
PU367 PE PRINT UTILS Lots of useful labelling progs
PU368 IMAGEBASE RUNTIME Standalone for CLI
PU369 TV TITLES DEMO Shareware Titling program
PU370 24 BIT UTILS Rend 24 & more useful utilities!
PU371 AMOS PRINTER ROUTINE For own Amos prog
PU372/3 PARNET SOFTWARE Link 2 Amigas! (2)+Y
PA144 LET ME OUT Amusing dog & slipper animation
PD208 HOI AGA DEMO 2 2nd fab demo for 1200 only! Y
PD209 STONE ARTS ATMOSPHERE Nice demo.!!+Y
PD210 ANARCHY 3D DEMO Superb effects.+(not1200)
PD211 POSEIDON CEREBAL LOBOTOMY Great,not1
PD212 KEFRENS DANE A short but nice demo! +Y
PD213 TROJAN TECKNO TRACKS Amazing effects!
PM188 SIDMANIA VOL1 7 hours of C64 chip music! +
PM189 CHIP 'N' DIP 20 chip music tunes & anim! +Y
PM190/1 DANCE TRASH 2 disk set of rave music(2) +Y
PM192 HOBBITS & SPACESHIPS music by Dr Awesome
PM193 BRAINSTORM MUSICLAND 2 Nice music disk
PM194/5 ULTIMATE ACTION MEGA MUSIC Fab (2)+Y
PS121 MANDLEBROT MANIA 5 moving mandlebrots
PS122 FERRARI AGA great 256 colour pics! (1200 only
PS123 CYCLIC ART Fantastic colour cycling disk! +Y

ORDERING MADE EASY

BY POST: send your Name, Address & Order details with a Cheque / PO / IMO to any of the companies listed
BY PHONE: Call us with your card number and details for a 1st class service. All major cards accepted
PD PRICES: 1 - 5 disks £2.00 per disk • 6 - 25 disks £1.25 per disk • 26 or more disk are still only 99p per disk !
POST & PACKING: UK - 50p • UK 'Recorded Delivery' £1.25 • Europe +25p per disk • Rest of World +50p per disk
REMEMBER: We stock Fish 1-890, Thag 1-74, Amos, Scope, Snag, Amicus, Amigos & lots more superb PD disks!!

PLEASE NOTE:
All disks on the advert should work on the Amiga 1.2/1.3 dos systems unless otherwise stated! All disks with a "+" sign should work on the Amiga 500+ & 600 machines!
However there are so many different setups now in use it is becoming impossible to test for every possible variation, so please use some caution especially with A1500/2000 with various dos systems, CDTV and of course the new Amiga 1200 & 4000 systems. Disks marked with a "Y" should be okay on the A1200 / 4000 though obviously not yet extensively tested. Please take care!

VISA

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ot the imitators !

P S D

Most CLR titles ok on A1200!

.. The Central Licenseware Register ..

Commercial Quality programs at a PD price !

Most CLR titles ok on A1200!

EDUCATIONAL

CLE01 TOTAL CONCEPTS DINOSAURS Learn your family all about the amazing dinosaurs! 2 disks 4.50. +
CLE02 TOTAL CONCEPTS GEOLOGY Superb book on a disk by Chris Hill, learn all about the rocks! 2 disks 4.50. +
CLE03 TOTAL CONCEPTS SOLAR SYSTEM A superb illustrated guide to our Solar system! 3 disks 4.99. +
CLE05 A-CHORD Teaches you all the chords you need to play the guitar, become the next Eric Clapton! 1 disk 3.50. +
CLE07 TOTAL CONCEPTS FRESHWATER FISHING Learn all about freshwater fishing! Comes on 2 disks 4.50 +
CLE08 NIGHT SKY Features over 1500 stars,sky can by displayed as seen from anywhere on earth! Exellent! 1 disk 3.50. +
CLE09 WORDS & LADDERS Good spelling program. 1 disk 3.50.+
CLE10 BASICALLY AMIGA Extensive guide to Amigados! Very good program for beginners. 3 disks 4.99! +
CLE11 LET'S LEARN For children of 5-7 years, progress through 5 levels of difficulty, Sums tunes etc. 1 disk 3.50. +
CLE12 ALPHABET TEACH Simple to understand spelling program for the kids! Shows picture,asks for word. 1 disk 3.50! +
CLE13 HOME BREW Create your own! 1 disk 3.50. +
CLE14 TOTAL CONCEPTS ECOLOGY Learn about the most important "ology" in our lives! Superbly illustrated! 3 disks 4.99. +
CLE15 FAST FRET This is a guitar scales tutor, 1 disk 3.50. +
CLE16 KINGS & QUEENS A history lesson on all of the Kings & Queens of England since recorded history! 2 disks 4.50.+
CLE17 THINGAMAJIG An electronic jigsaw with 24 pictures, place the pieces correctly on the screen, by Len Tucker. 1 disk 3.50. +
CLE18 WORK & PLAY 3 educational programs: CLICK CLOCK learn the time,FUNTIME TABLES maths & GO SHOPPING! 1 disk 3.50. +
CLE19 PLAY IT SAFE Teaches safety in the home, Help Teddy make your home safe from the beasties! 1 disk 3.50. +
CLE20 BIG TOP FUN Four program,Word balance,Matchplay,Balloon burst & Seal a grams 1 disk 3.50. +
CLE21 JIGMANIA Jigsaw solving & construction set! 1 disk 3.50! +
CLE22 CHESS TEACHERteach chess in a fun way! 1 disk 3.50. +
CLE23 MIND YOUR LANGUAGE improve speech 1 disk 3.50. +
CLE24 SPEED READING This program tests your reading speed & helps you improve it! 2 disks 4.50. +
CLE25 CHORD COACH This is a superb Piano Tutor, learn the chords & hear the Amiga play them! 1 disk 3.50. +
CLE26 SNAP An educational game for languages, 1 disk 3.50. +
CLE27 C.A.T.T.This is a superb Tarot reading program! Now you can read your own! 2 disks 4.50! +
CLE30 PEG A PICTURE Make a picture from coloured pegs or coloured shapes, great for young kids! 1 disk 3.50. +
CLE31 UNDERSTANDING AMOS This set will really help you learn how to use Amos! (NEEDS AMOS) 2 disks 4.50. +
CLE32 SPITFIRE! Superb illustrated book on a disk covering the legendary WWII fighter plane! 2 disks 4.50.+
CLE33 MESSERSCHMITT BF109 Another super WWII book on a disk, this time the German Messerschmitt! 2 disks 4.50.+
CLE34 YOUR FIRST PONY Want to learn to look after & ride a pony? This will learn you all you need to know! 2 disks 4.50.+
CLE36 THE TIME MACHINE Teaches kids to tell time, 2 disks 4.50.+
CLE37 DISCOVERY AMERICA Learn all about the colonisation of the United States of America! 1 disk 3.50.+
CLE38 HOME INVENTIONS First in the quest for knowledge series, this picture book deals with inventions since 1750. 2 disks 4.50.+
CLE39 MY LITTLE ARTIST Superb colouring book for children,with features for disabled as well! Needs 1mg chip ram. 2 disks 4.50.+
CLE40 BOREALIS JUNIOR Drawing for young children 1 disk 3.50+
CLE41 BASICALLY MEDICINE multimedia encyclopedia 2 disk 4.50+
CLE42 COMPOSITION Photograph Tutorial disk. 1 disk 3.50.
CLE43 AMOS LANGUAGE QUIZ Helps learn Amos. 1 disk 3.50+
CLE44 PORTRAITURE 2nd photo tutorial program. 1 disk 3.50+
CLE45 FUN WITH CUBBY 2 Another 7 fab kids games! 1 disk 3.50+

UTILITIES

CLU01 VIDEO TITLER Create video titles! 1 disk 3.50! +
CLU02 FISH INDEXER database for the Fish library! 1 disk 3.50. +
CLU03 TYPING TUTOR Full typing course,shows you where to put your fingers & more! Comes on 1 disk 3.50.+
CLU04 ALPHAGRAPH for producing Bar & Pie charts etc! 3.50. +
CLU05 S.A.S. MENU MAKER make your own menu's 1 disk 3.50. +
CLU06 SUPER SOUND III Superb sampling program, samples & allows special effects such as reverb & flanging! 1 disk 3.50.+
CLU07 PHILO Simple to use database system, 1 disk 3.50.+
CLU08 WORD FINDER crossword & anagram solver & 2 disks 4.50+
CLU09 PLAY & RAVE2 Music module linker, 2 disks 4.50+
CLU10 POWER ACCOUNTS account statements, income etc! 3.50.+
CLU11 CALC V1 very useful spreadsheet program! 1 disk 3.50. +
CLU12 VIRTUAL WINDOWS Notebook Address booketc1 disk 3.50.+
CLU13 DATOS A powerful database, many features. 1 disk 3.50. +
CLU14 STOCK CONTROLLER Keep track of stocks! 1 disk 3.50. +
CLU15 EPOCH VI calendar for Amiga,1299 yr diary 1 disk3.50.+
CLU16 CROSS STITCH good needlework program,1 disk 3.50 +
CLU17 LC10 FONTS Nice fonts for Star LC10 printer! 1 disk 3.50.+
CLU18 LC200 FONTS Fonts for your LC200 printer! 1 disk 3.50. +
CLU19 LC24 FONTS Fonts for your Star 24 pin printer. 1 disk 3.50! +
CLU20 CANON BJ10. Super Fonts for Cannon Bubblejet 1disk 3.50+
CLU21 INVOICE MASTER Sort out your invoices! 1 disk 3.50. +
CLU22 HARD DRIVE MENU Superb hard drive utility! 1 disk 3.50.+
CLU23 F15 ANIM BRUSHES Needs D paint! 1 disk 3.50.+
CLU24 RED LOTUS ANIM BRUSHES Needs D Paint 1 disk 3.50.+
CLU25 STARFIGHTER ANIM BRUSHES Need D Paint 2 disks 4.50.+
CLU26 STAR VOYAGER ANIM BRUSHES for DPaint 3 diskss 4.99+
CLU27 IMAGE BASE Simple to use authoring package 1 disk 3.50.+
CLU28 CREATIVE ADVENTURE TOOLKIT Needs 1mb chip . 3.50+
CLU29 G.F.X. Graphics convertors, sprite editors etc! 1 disk 3.50+
CLU30 DRAW SELECTOR V2 pools prediction program 1 disk 3.50+
CLU31 FLOWCHARTER For creation of flowcharts! 1 disk 3.50+

GAMES

CLG05 TRUCKIN ON Truck management simulation 2 disks 4.50 +
CLG06 OBLITERATION Super blast em up! (NOT DOS 2) 1 disk 3.50
CLG08 DRAGON TILES Superb version very addictive ! 1 disk 3.50 +
CLG09 MOTOR DUEL great 3d car racing game. 1 disk 3.50+
CLG10 FUTURE SHOCK Guide ball through maze! 1 disk 3.50 +
CLG11 ALL GUNS BLAZING 2 player , overhead view. 1 disk 3.50 +
CLG12 BULLDOZER BOB Clear screen of blocks! 1 disk 3.50 +
CLG13 PARADOX Another good puzzle game! 1 disk 3.50 +
CLG14 SONIC SMARTIEHEAD Crazy platform game! 1 disk 3.50.+
CLG15 SPLODGE THE ESCAPE puzzle platformer 1 disk 3.50+
CLG17 IMBRIUM Exellent graphic adventure! 1 disk 3.50+
CLG18 SKAN 29 Guide Sid through 220 levels! 1 disk 3.50. +
CLG19 STELLAR ESCAPE Vertical shoot em up! 3 disks 4.99. +
CLG20 JUNGLE BUNGLE Nice adventure game! 1 disk 3.50. +
CLG21 FLOWER POWER Gro before the bugs eat them1 disk 3.50+
CLG22 STOCKING FILLERS Seasonal Xmas games! 1 disk 3.50. +
CLG23 MARVIN THE MARTIAN A maze type game, 1 disk 3.50.+
CLG24 EASY MONEY fruit machine simulator! (Not dos 2 or 3) 3.50.
CLG25 WHITE RABBITS This is a good puzzle game! 1 disk 3.50 +
CLG26 MONSTER ISLAND Dungeon Master game! 1 disk 3.50.+
CLG28 TIME RIFT Game played over 4 time zones! 1 disk 3.50.+
CLG29 BILLY BALL Good 3d isometric game! 1 disk 3.50.+
CLG30 CAPTAIN K Nice platform game! 1 disk 3.50.+
CLG31 DIRTY RACKETS 3 tennis games on here! 1 disk 3.50.+
CLG32 7 BLOCKS stop the falling blocks! 1 disk 3.50! +
CLG33 BAT 'O' ROONS 2 player bat & ball game 1 disk 3.50+
CLG34 CYBERNET Sideways scrolling shoot em up 1 disk 3.50+

CHORD COACH
Spitfire!

HOME BREW
TRAVEL FAR
BACK IN TIME

CLE028 FUN WITH CUBBY A superb educational disk containing 8 programs: Memory game,Paint studio, Count with Cubby, Apple catcher,Let's Spell,Typing tutor, Puzzler & Cubby's lost! This one is guaranteed to keep the kids amused for hours! Simply enter each subgame through a door, a superb value for money disk, supplied on 1 disk only 3.50.+

CLE035 TOTAL CONCEPTS SOLAR SYSTEM 2 In this sequel to our most popular title, Chris Hill brings you the very latest on the Solar System! All the very latest planetary missions are covered & if you thought the images in TC! Solar System were good wait until you see these 40+ images! This is a must if you have

CLE029 PREHISTORIC FUN PACK This is a superb title containing four fun dinosaur games, Dinoslider a tiles puzzle game, Dinosaw is a jigsaw memory game. Snakes & caves is the old favourite snakes & ladders, and Eggstinct is a fun egg collecting game! Will keep the kids amused for ages! 1 disk 3.50.+

CLASSIC LITERATURE!

on a disk, perfect for English Literature revision!(ok 500+,600, 1200)

LIT1 Midsummer nights dream, Macbeth, Julius Caesar,Anthony & Cleopatra.
LIT 2 As you like it, Lovers complaint, Cymbeline, Hamlet.
LIT 3 Romeo & Juliet, Passionate pilgrim,Phoenix & Turtle,Sonnets, Coriolanus
LIT 4 Twelth night, Venus & Adonis, Troilus & Cressida, Love labours lost.
LIT 5 Two Gentlemen of Verona,A Winters tale,Rape of Lucrece,Pericles.
LIT 6 Othello,Much ado about nothing, Measure for measure.
LIT 7 Henry the Sixth (Parts 1, 2, & 3)
LIT 8 Henry the Fourth (Parts 1 & 2) Henry the Fifth.
LIT 9 Richard the Second, Richard the Third.
LIT10 Henry the Eighth, King John, King Lear.
LIT11 The Taming of the Shrew,The Tempest,Timon of Athens,Titus Andronicus
LIT12 Alls well,Comedy of errors,Merchant of Venice,Merry wives of Windsor.
LIT13 WORKS OF MILTON 1 Paradise Lost.
LIT14 WORKS OF MILTON 2 Poems, Sonnets etc
LIT15 WORKS OF HOMER The Iliad (2 disks)
LIT16 WORKS OF HOMER The Odyssey
LIT17 MARK TWAIN Tom Sawyer
LIT18 MARK TWAIN The Prince & the Pauper.
LIT19 LEWIS CARROLL Alice in Wonderland & Alice Through looking glass

AMIGA CD ROM COMPACT DISCS!

Superb CD roms for your CDTV or A570 add on drive!

CDPD 1 Features Fred Fish 1-660 , hundreds of music modules, & much much more! 19.95

CDTV DEMO DISK Over 600 megabytes of demos, samples, games, clipart, animations & 1000 modules to play! 19.95

CDPD 2 This CD contains Fred Fish 661-760, the Scope library 1-220, The AB20 archives & much more! 19.95

Please add 50p per CD for P&P.

ALISTAIR IN OUTER SPACE.

This is a superb educational Compact disk for young children! An interactive storybook telling the story of a young boy who is abduted by an alien spacecraft, but he insists on being returned home to return his overdue librarybooks. Watching the story is actually like watching a childrens program on TV and the speech is very good & clear! However there is much more to it than that as you can click on objects on screen & get a spoken & written word! Also there is a selection of puzzles to solve & a colouring pad so there is quite a lot to keep the kids occupied!

WEIRD SCIENCE:

Superb 256 colour hires pictures! 1200 only! *order nos:WSAGA1 - 5*

WEIRD SCIENCE SUPER HAM:

Fantastic 262000 colour hires raytraced & digitized pictures, hardly any different to the 24 bit originals, show to PC owning friends and watch them weep!

order nos: SH1-15 .... 15 Super discs!

WSAGA6 + 7 *JPEG loaders!!* These disks contains 24 bit Jpeg pictures which unpack in ram to display as Superham 8 on a 1200/4000 machine!! Brilliant!

WSAGA8-12 5 Jpegs of wildlife pics,16 megabytes unpacked per disk! displays as superham on 1200! Amazing!

WSAGA13 24bit Jpeg Vista landscapes!

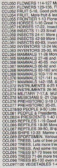
JPEG 24 BIT PICS!

An amazing 12 discs full of brilliant 24 bit pics by Michel Rigo! Remember you need tons of memory & some form of 24 bit display to view, or convert to superham! JP1-12.

COLOURED CLIPART! NEW!

perb collection of coloured clipart,
m mode (4096 colours), though some is
s. Can be loaded into Deluxe Paint 4
package accepting Ham pictures!
500+, 600, 1200 & 4000!)

Alganistan - Botswana, autoboots! + Y
Brazil - Checkoslovakia, autoboots! +Y
Denmark - Grenada , hires maps! +Y
Guadel - Illinois, hires maps! +Y
India - Luxembourg, hire maps! +Y
Macau - Missisipi, autoboots! +Y
Montana - New York, hires maps! +Y
Neutral Zone - Iraq - S Dakota! +Y
Senegal - Tuuaw, autoboots! +Y
Texas - Zimbabwe, autoboots! +Y
LES, good pictures, autoboots! +Y
ORS famous faces, autoboots! +Y(2)
AFT, 1-26, assorted, autoboots! +Y
AFT, 27-32 & Cars! autoboots! +Y
1-12 Super pictures, autoboots! +Y
13-29 More avian pictures! +Y
30-41 Lots more birds,autoboots! +Y
Many more bird pics, autoboots! +Y
And some more fab pictures! +Y
116-130 Some good pictures! +Y
131-138 More bird pictures! +Y
More superb pictures here! +Y
1-16 Super cat pics,autoboots! +Y
1-126 Super dog pics,8 disks! +Y
ORERS 1-13 famous explorers,autoboots+y
1-82 Super pics pictures,(4 disks)+y
ERS 1-13 Flower pictures,autoboots!+y
ERS 14-25 More flower pics,autoboots!+y
ERS 26-37 More flower pics,autoboots!+y
ERS 38-50 More flower pics,workbench+y
ERS 51-62 More flower pics,autoboots!+y
ERS 63-74 More flower pics,autoboots!+y
ERS 75-87 More flower pics,autoboots!+y
ERS 88-100 More flower pics,autoboots+y
ERS 101-113 More flower pics,autoboots+y



CCL050 FLOWERS 114-127 More flower pics,autoboots+y
CCL051 FLOWERS 128-138, FRUIT 1-4 pics autoboots+y
CCL052 FRUIT 5-18. Good pictures! autoboots! +Y
CCL054 FRUIT, More fruit & leaves etc!,autoboots+Y
CCL055 FRONTIER 1-13 Pioneer pictures,autoboots
CCL056 HORSES 1-16 Great horse pics,autoboots! +Y
CCL057 HORSES 17-22, Insects 1-9, autoboots! +Y
CCL058 INSECTS 11-23 Small creatures! +Y
CCL059 INSECTS 24-41 More pics! autoboots! +Y
CCL060 INSECTS 42-59 More insects! autoboots! +Y
CCL061 INSECTS 60-63, Inventors 1-11 autoboots! +Y
CCL062 INVENTORS 12-24 More inventors autoboots! +Y
CCL063 INVENTORS 25-30, MAMMALS 1-10! autoboots! +Y
CCL064 MAMMALS 11-26 More animals pictures! +Y
CCL065 MAMMALS 27-46 and more animals! +Y
CCL066 MAMMALS 45-65 more mammals,autoboots! +Y
CCL067 MAMMALS 66-82 and some more! autoboots! +Y
CCL068 MAMMALS 83-102 and many more autoboots+Y
CCL069 MAMMALS 103-119 many more! autoboots! +Y
CCL070 MAMMALS 121-141 superb pictures! autoboots +Y
CCL071 MAMMALS 142-158, & INSTRUMENTS 1-4! +Y
CCL072 INSTRUMENTS 4-25 Musical! autoboots +Y
CCL073 INSTRUMENTS 26-36, MILITARY 1-6 autoboots +Y
CCL074 MILITARY 7-17,& MUSICIANS 1-4! +Y
CCL075 MUSICIANS 9 -21 Classical! autoboots! +Y
CCL076 PREHISTORIC 2-19 Dinosaurs! autoboots! +Y
CCL077 PREHISTORIC 20-25, PEOPLE 1-8 autoboots! +Y
CCL078/80 PEOPLE 9-50 Lots of people! (3 disks)+Y
CCL081 PEOPLE & Presidents, good pictures! +Y
CCL082/4 PRESIDENTS 1-40 USA presidents,3 disks +Y
CCL085 REPTILES 1-19 Good pictures autoboots! +Y
CCL086 REPTILES 19-38 More reptiles! autoboots! +Y
CCL087 REPTILES 39-50, Ships 1-9,autoboots! +Y
CCL088 SHIPS 10-33 Marine vessels! +Y
CCL089 SPORTSMEN. Various sportsmen,autoboots! +Y
CCL091 TREES, Lots of tree pictures! autoboots! +Y
CCL092 TREES, Lots more tree pics! autoboots! +Y
CCL093 TREES, And some more trees! +Y
CCL094 TREES 57-70 trees lots of trees,autoboots!+y
CCL095 TREES 71-84 more tree pictures, autoboots!+y
CCL096 TREES 85-100 even more trees,workbench!+y
CCL097/100 VEGETABLES 1-48 good pics 4 disks,workbench+y

CLASSIC CLIPART (Black & White)

(Okay on A1200 / A4000.)

The clipart in this collection is very high quality, huge bitmaps, many greater than an Amiga hires screen, for use in Dpaint or DTP packages, each disk autoboots as a slideshow allowing you to view the entire bitmap by moving the mouse! (Prices per disk!)

ART01 WEDDINGS Super wedding clipart, 2 disks!+
ART02 HOUSES 2 disks, pictures of mansions etc!+
ART03 RELIGIOUS 3 disks full of holy clipart!+
ART04 WWII AIRCRAFT World war II planes!+
ART05 MEN 2 disks full of men at work!+
ART06 WOMEN 2 disks full of women clips!+
ART07 KIDS 2 disks containing kids clipart!+
ART08 BUSINESS Disk full of office clipart!+
ART09 OFFICE Another office type disk!+
ART10 STUDENTS Lots of student type pics!+
ART11 SALETIME Many useful logos etc!+
ART12 XMAS 3 disks of Xmas related pics!+
ART13 PUNCH 3 disks of cartoon pics! +
ART14 ANIMALS Fantastic quality pictures!+
ART15 CATS Only 12 pics but super quality!+
ART16 SILHOUETTES 18 super silhouettes!+
ART17 SCHOOLS 2 disks of school pictures!+
ART18 BABIES Clipart on a baby theme!+
ART19 SPORT 2 disks full of sport pictures!+
ART20 OLYMPIC Another sport type disk!+
ART21 MEDICAL 2 disks full of medical clipart!+
ART22 SEALIFE Pictures from the Ocean!+
ART23 DECORATIVE MONTHS 1 for every month+
ART24 WACKY Funny comic type clipart!+
ART25 HOLIDAYS Holiday type pictures!+
ART26 BANNERS 2 disks full of banners!+
ART27 ART NOUVEAU FLOWERS Floral art!+
ART28 BUTTERFLIES Nice pictures!+
ART29 FOOD 2 disks on a food/kitchen theme!+
ART30 COLOURING BOOK Colour in Dpaint!+
ART31 BORDERS 2 disks, must load into DTP!+
ART32 MAC CLIP 2 disks high quality macart!+
ART33 HORNBACK Nice scenic clipart!+
ART34 TEDDY BEARS 2 disks of Teddy bears!+

ART35 VANITY FARE 2 disks fashion clipart!+
ART36 HALLOWEEN CLIPART Wierd clipart!+
ART37 SHOWTIME Dancing, singing etc!+
ART38 VEGGIES Vegetarian clipart!+
ART39 FLORAL 14 very detailed pictures!+
ART40 MYTHS Mythical images + zodiac!+
ART41 DOG WOODCUTS Super 300dpi pics!+
ART42 CAT WOODCUTS Great wildcat pics!+
ART43 AFRICAN WOODCUTS African animals!+
ART44 AMERICAN WOODCUTS More animals!+
ART45 ARTIC WOODCUTS Northern animals!+
ART46 FARM WOODCUTS Farm animals!+
ART47 MIXED ANIMAL WOODCUTS Nice pics!+
ART48 BIRDS WOODCUTS 18th century bird pics+
ART49 MORE ANIMALS More superb pictures!+
ART50 ANIMAL LINEART Varied selection of pics
ART51 BOTANICAL ART detailed plant pics!+
ART52 FAMILY SCENES 2 disks of domestic life!+
ART53 GOLF HUMOUR 2 amusing cartoon disks!+
ART54 SPACE & TRANSPORT On a space theme!+
ART55 SOFTSCENE2 29 rural scenery pictures!+
ART56 SPORTS3 More pics on a sports theme!+
ART57 NAVY Lots of naval type pictures!+
ART58 TRAVEL 2 disks on a travel theme!+
ART59 ALPHABET Borders & alphabet clips!+(2)
ART60 ACCENTS & FLASHES Burst stars+ more+
ART61 FISH Lots of aquatic pictures! +Y
ART62 SOFTSCENE 3 More nice scenery pictures! +Y
ART63 RESTAURANT 3 disks of Restaurant pictures(3)+Y
ART64 MORE HOLIDAYS Festive holiday pictures! +Y
ART65 ANIM & BIRD 44 nice pictures! +Y
ART66 MOSSBURN ANIMALS 32 nice animal pictures! +Y
ART67 BURCHFIELD KIDS Some nice kids clipart! +Y
ART68 BEAST & MYTH 3 disks of Monsters,demons etc!(3)+Y
ART69 TRANSPORT 3 disks of Cars,Airplanes Ships etc!(3)+Y
ART70 TRUCKS & TRAINS Full of Wagons trains etc! +Y
ART71 ASTROLOGY 2 disks of astrological signs! +Y
ART72 AIRCRAFT 3 disks full of aircraft pictures!(3) +Y
ART73 BIRDS Songbirds, Birds of Prey & more! +Y
ART74 DOGS Disks full of good dog pictures! +Y
ART75 HOUSES CASTLES & BUILDINGS Good pics +Y
ART76 SPORTS-MAC Lots of good sports pictures! +Y

OGRAMMERS : Have you
tten a good program, ie a
ity, educational program or
game? Why not send it in for
luation? If its really good,
you too could be earning
ney!!!

BLITTERCHIPS

CU09, CLIFFE HOUSE, PRIMROSE
STREET ,KEIGHLEY. BD21 4NB.
TEL: 0535 667 469
FAX: 0535 667 469

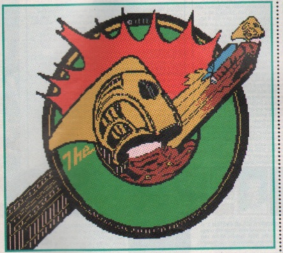
NBS

CU09, 1CHAIN LANE, NEWPORT
I.W. PO30 5QA
TEL: 0983 529 594
FAX:0983 821 599

VALLY PD

CU09, PO BOX 15, PETERLEE
CO. DURHAM SR8 1NZ
TEL:091 587 1195
FAX:091 587 1195

ART GALLERY

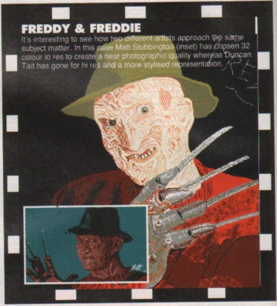


ROCKETEER
A lovely example of cartoon style art by Warren Oyen of Neerpelt, Belgium. Nice bold image with just the right amount of detail around the face mask. All the more effective because of the unobtrusive white background. Although shouldn't the word 'Rocketeer' appear in the green band at the bottom?

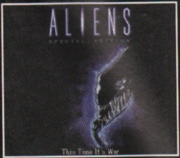
SPECIAL SPECIAL SPE

This issue Art Gallery gets special as Mat Broomfield rounds up some of the best movie tie-in screens ever seen.

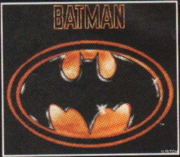
Over the years we've received dozens of Art Gallery entries which take the movies as their inspiration. Virtually all of them attempt to duplicate the cinema poster or magazine ad that was originally used to promote the film. There seems to be two reasons for this: 1. It's far easier to copy a poster or magazine page; and 2. It doesn't require any thought about how the screen should be composed, that part has already been done. Nevertheless, the following pictures really do represent the very best that Amiga art has to offer.



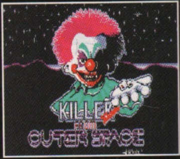
FREDDY & FREDDIE
It's interesting to see how two different artists approach the same subject matter. In this case Matt Stubbington (inset) has chosen 32 colour lo res to create a near photographic quality whereas Duncan Tait has gone for hi res and a more stylised representation.



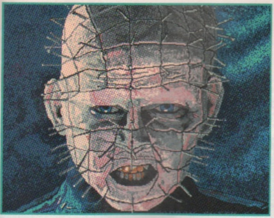
ALIENS
Ray Parry of Norris Green in Liverpool demonstrates that less is more in this reproduction of the Aliens video sleeve. By framing the Alien in a flash of electric blue the picture is given dramatic effect.

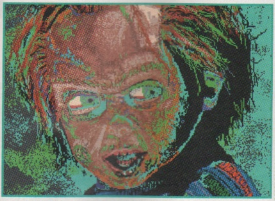


BATMAN LOGO
Although drawn in 32 colour low res mode, M. Pitcher's Batman logo is beautifully blended, and the gold has an almost tangible texture. The use of fake highlights sets the image off well.



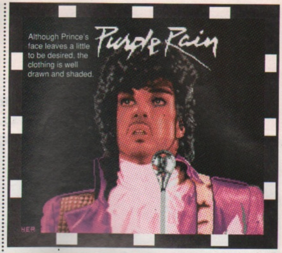
KILLER KLOWN
Another good example of the cartoon style, this time by Chrull. Very strong colours ensure that the central character of this black comedy stands out. The effect is enhanced by the comic book style.





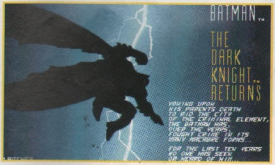
HELLRAISER AND CHUCKY

Of all entries submitted, these two by Gordon Smith of Glasgow were the only ones that really demonstrated the artist's unique style, and I strongly suspect that Gordon is a dab-hand with oil paints. Notice the unusual way he represents shading, especially on the characters' foreheads.



Purple Rain
HER

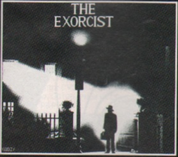
Although Prince's face leaves a little to be desired, the clothing is well drawn and shaded.



BATMAN™
THE DARK KNIGHT™ RETURNS
VOWING UPON HIS PARENTS DEATH TO RID THE CITY OF THE CRIMINAL ELEMENT, THE BATMAN HAS, OVER THE YEARS, FOUGHT CRIME IN ITS MANY MACABRE FORMS...
FOR THE LAST TEN YEARS NO ONE HAS SEEN OR HEARD OF HIM...

DARK KNIGHT

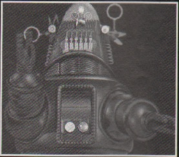
As if to confirm his mastery of shading M.Pitcher has chosen to draw the cover of the Batman book... of the film of the television series of the book (sort of...)! Notice the way that electric blue in the form of lightning forms a very dramatic focal device behind the main character.



THE EXORCIST

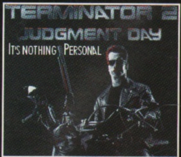
THE EXORCIST

Warren Kelling has restricted himself to only 16 shades of grey for the main image in this poster reproduction, yet in his more than capable hands the result is stark and impressive.



ROBBY THE ROBOT

With the same choice of palette, Warren has managed to create a quite interesting effect with Robby the Robot. His use of reflection softens what would otherwise be a clinical image.



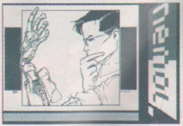
TERMINATOR 2
JUDGMENT DAY
IT'S NOTHING PERSONAL

TERMINATOR 2

Demonstrating his preference for harsh subject matters, Warren Kelling's Terminator 2 screen is a good example of the way that an image can become more sinister if lit with blue or red light.

PD SCENE

It may be cheap, but is it any good? Tony Dillon dishes the dirt on the latest software releases. Keep it here to find out what's hot and what's rot.



BOUNDLESS VOID

demo

As the years wear on, coders are having a hard time creating demos that contain anything new or fresh – some just don't have the imagination. One team that does, though, is Nenol from Sweden, as their Boundless Void demo shows only too well. Sure, you start off with all the usual bit flags and still image slideshows, but this single disk package does have a few treats in its favour.

Possibly the most impressive routine is what I will call 'Pinhead'. You know those small boxes filled with small metal pins, that people have endless fun pressing their faces into to create an image (Midge Ure used one to great effect) – that's the image that this routine creates. Fast and effective, this is better than soluble aspirin.

Available from: 17 Bit, 1st Floor Offices, 2/8 Market Street, Wakefield, WF1 1DH. Tel: 0924 366982. Disk No. 2601. Price: £1.75 (including P&P).

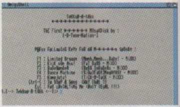
81%

TEKKNO-A-TAK

music disk

This is what we want! Here's a disk full of real techno – not just your normal demo tunes with a few squidgy samples, these are vinyl-quality tracks of the stompiest order.

There are five of the little devils on the disk, all of which are hard, but not hardcore. Kicking bass drums and explosive snares are the order, along with Joey Beltram hoover noises and incessant bass lines. All you need now is a room full of sweaty bodies, a 2000 watt strobe, and you're sorted! It's a shame there aren't any graphics, 'cos that would really round it off in style. Even without visuals though, it's well impressive, and should be snapped up by all tune-hungry tekheads immediately. A spot-on debut release from D-Tone-Nation.

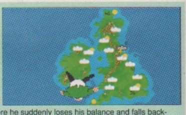


Available from: Cynostic PD, 85 Wyken Croft Road, Coventry CV3 2AD. Tel: 0203 613817. Disk no. S0117. Price: £2.00 (including P&P).

90%

WEATHERMAN

animation



This collection of a dozen or so animations are among the strangest we've seen here. It all starts in the normal way, with your average looking weather man standing in front of your average looking weather map. But then things start to go a little wrong. For example, all the suns drop off the map, or the sign showing the date and time falls from the top of the screen knocking our hero out. Strangest of all, however, is the second scene, where he suddenly loses his balance and falls backwards towards the map, which now, due to the laws of perspective, doesn't look like a map any more. In fact, it looks a lot more like the real thing. Very odd and very funny.

Available from: 17 Bit, 1st Floor Offices, 2/8 Market Street, Wakefield WF1 1DH. Tel: 0924 366982. Disk No. 2652. Price: £1.75 (including P&P).

80%

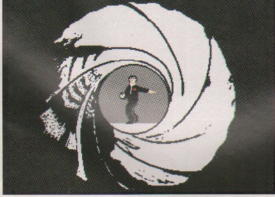
BOND'S LAST STAND

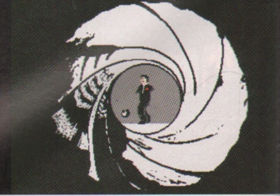
animation

This short animation by Grove is based loosely upon the opening titles of any James Bond film you may have seen, and poses the question 'What would happen if Bond missed?'. Essentially, all that happens is that James walks forward, surrounded by the familiar black hole, turns toward the 'camera' and fires, only this time the camera operator doesn't die. Bond fires a couple more times, gets a little desperate, and fires some more. Then the camera operator fires back, blowing Bond into tiny pieces. Short but sweet, this anim is well worth a look.

Available from: Cynostic PD, 85 Wyken Croft Road, Coventry CV3 2AD. Tel: 0204 613 817. Disk no. A0075. Price £2.00 (including P&P).

72%





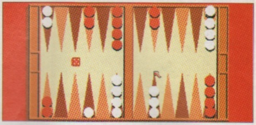
SERIOUS BACKGAMMON

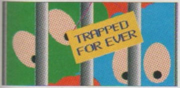
game

There are those who find Backgammon to be one of the most exciting boardgames ever – more addictive than Draughts and more tactical than Chess. For those people there have been literally dozens of computer interpretations, and this is a good one by any standards.

The game of Backgammon is too complicated to explain in this small a space, so I'll assume you know the rules. What this version offers you is a fairly competent computer opponent, a full tutorial for beginners, help and analysis on your playing techniques and every other optional extra you could wish for.

Available from: Cynostic PD, 85 Wyken Croft Road, Coventry CV3 2AD. Tel: 0204 613 817. Disk no. G0143. Price £2.00 (including P&P). 83%





FWUFF

game

Yes, it does have a silly name, and it's one that is used throughout the plot, as the fwuffy Fwuffs from the planet Fwuff try to get home after getting stuck in space. It's a also poor excuse for having characters who look like they should be running around in *Tiny Skweeks*. But enough on the less than wonderful graphics, what's the game like?

Well, it's Solitaire basically. The Fwuffs have been trapped in grids, and the only way to rescue them is to get them to jump over each other, in the style of that age old peg-board game. And that's about it, really.

Available from: Roberta Smith PD, 190 Fallon Way, Hampstead Garden Suburb, London NW11 6JE. Tel: 081 455 1626. Price: £2.00 (including P&P). 73%

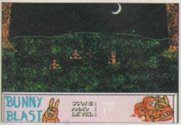
BUNNY BLAST

game

God, this is really, really sick. Ben Ashley was obviously so bowled over by the idea that he just wanted to get it finished rather than spend any time and effort on his program. Written in AMOS, this is a very simple shoot 'em up, where you use your mouse pointer as a gun sight and try to blow away a collection of moving targets. OK, this kind of thing has been done time and time again, but has it ever been done with rabbits?

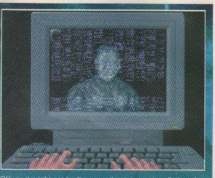
Yes, you did read correctly. This twisted little adventure involves blasting a load of helpless bunnies as they leap around the screen. The graphics are awful, the sound effects are pathetic and the backdrops were drawn in about five minutes. Otherwise, quite a laugh.

Available from: Cynostic PD, 85 Wyken Croft Road, Coventry CV3 2AD. Tel: 0204 613 817. Disk no. G0126. Price £2.00 (including P&P). 45%



ALCHEMY

animation



Rage have obviously spent a long time working on this one. They also seem to have been studying Tobias Richter's work, but that's no bad thing. This mini-movie, which wins a million percent for not being written in AMOS or Moviesetter, tells the story of someone accidentally being beamed aboard an alien spaceship, stealing one of their crafts and then being chased through Darth Vader's sewer system. Most of the animation sequences appear to have been constructed in *Deluxe Paint* or some similar program, but the most impressive stuff comes from the flight scenes, where polygon craft are overlaid on a fractally generated backdrop. OK, so it might not be the smoothest or most realistic animation around, but it's interesting enough. My only real complaint is the large loading times between each five second scene, where you're left looking at a black screen.

By the way, watch out for Darth Vader on the bog!

Available from: 17 Bit, 1st Floor Offices, 2/8 Market Street, Wakefield WF1 1DH. Tel: 0924 366982. Disk No. 2600(A/B). Price: £1.75 per disk (including P&P). 77%

3D GAMES DISK

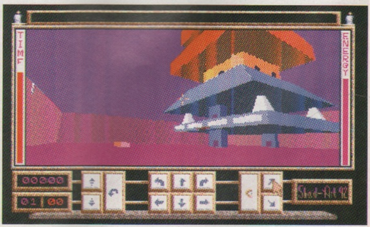
games

The *3D Construction Kit* was a very good idea, but it had two main problems. The first is that you can automatically spot any game ever written on it from a mile away. The second is that anything produced on it is far too slow to ever be playable. Even so, someone has taken the time and effort to create three huge games for it and stick them on a single disk – poor fellows.

Each of the games has a broad and exciting scenario, but they all boil down to the same game. Wander slowly and jerkily through lots of boxes shooting switches and collecting things. Not particularly inspiring play by anyone's standards.

The real problem with these is that the designers have just been too clever, creating huge detailed rooms that look fabulous on screenshots, but just give the poor old Amiga too much to move at once, leaving you with something almost completely unplayable.

Available from: 17 Bit, 1st Floor Offices, 2/8 Market Street, Wakefield WF1 1DH. Tel: 0924 366982. Disk No. 2608. Price: £1.75 (including P&P). 41%



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U154 AUDIO ANIMATION - Animation studio, plus you can add sound effects in sync with the visuals.
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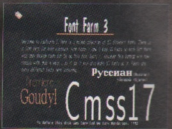
ALL DISKS ARE COMPATIBLE WITH ALL AMIGA'S UNLESS STATED OTHERWISE.

PD UTILITIES

The definitive guide to the public domain. More useful utilities at affordable prices, this month sorted into a strange semblance of order by Tony Dillon.

FONT FARM 3

fonts



What can I say, it's a font pack, crammed full of 50 different Workbench font files, ranged over about two dozen different fonts of varying sizes. If you're the kind of person who needs to use a lot of fonts, say for DTP or advanced word processing, then this is a cool disk to get hold of, along with the two predecessors each of which carry 55 different fonts. There are standard typefaces like Courier, Topaz and Dpaint on here, along with more unusual fonts like Premiere and Goudyl and even the original Star Trek font, for those of you who just can't get enough of thick serifs. A good value package.

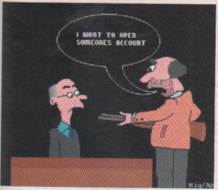
Available from: 17 Bit Software, 1st Floor Offices, 2/8 Market Street, Wakefield, West Yorkshire WF1 1DH. Tel: 0924 366982.
Disk no. 2644. Price: £2.00 (including P&P). Compatibility: All Amigas

90%

SUPERVIEWER V1.0

slideshow maker

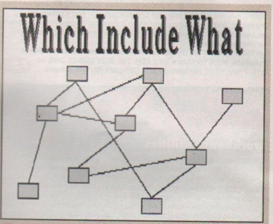
For as long as the Amiga has been able to display IFF images, there have been slideshow makers available on Public Domain. Superviewer from Cynostic PD has to be one of the most straightforward yet. A simple piece of code, it reads IFF images from disk and displays them for a few seconds, and then loops the whole thing. If you want to have music playing, just stick a tracker module on the disk!


I WANT TO OPEN SOMEONES ACCOUNT
Mig/An

There's no need to write complicated scripts, or learn a new language. All you need to do is rename your IFF files with numerical names ranging from 1 to 100. The source code will automatically read the directory and show them in ascending order. You don't even need to place them in neat increments – 5, 7, 13 will work just as well as 1, 2, 3. If you want a neat, easy to use slideshow viewer, then this will do just fine.

Available from: Cynostic PD, 85 Wyken Croft Road, Coventry CV2 3AD. Tel: 0203 613817. Disc no. U0179. Price: £2.00 (including P&P). Memory: 512K. Compatibility: All Amigas.

81%



AMIGA C ENCYCLOPEDIA

programming utilities

Appendices

This will be a godsend for anyone who's been following John Kennedy's recent C tutorials in CU AMIGA. It's a 13 disk set that aims to give you a complete guide to C programming on the Amiga.

Disk one is an introduction to the workings of the Amiga. The next three concentrate on Intuition, disks five to seven cover graphics, with chapters on sprites, the blitter, bobs, scrolling and collision detection, while disk eight is dedicated to the operating system, including sections on AmigaDos. A further three disks cover devices, and the last couple are all about sound.

There's plenty of example source code to back up the tutorials, and appendices are included for reference. The whole set is going to set you back a bit more than your average PD purchase, but when there's so much on offer, C programmers would be fools to miss out on it.

Available from: Cynostic PD, 85 Wyken Croft Road, Coventry, CV2 3AD. Tel: 0203 613817. Disk nos. U0190 A-M. Price: £13.60 (including P&P). Memory: 512K. Compatibility: All Amigas.

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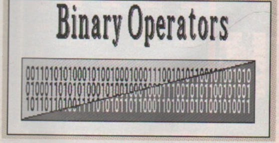


»

» MING SHU CHINESE ASTROLOGY

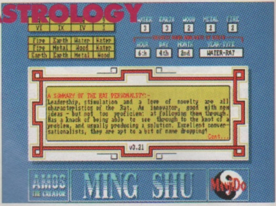
chinese horoscope

Although most people find horoscopes to be a pile of pap, there are far fewer who would connect the surprisingly accurate Chinese horoscope with the tosh that appears in the newspapers each day. There are hundreds of books on the subject, but all involve an afternoon with some headache tablets to figure out exactly what sign you are, let alone what's going to happen to you tomorrow. Unlike standard horoscopes, which assume that anyone born within two dates, regardless of year, time of birth, sex, race or creed are all planning a holiday, the Chinese take everything into account.

For those of you who can't be bothered to sit down and work it out, this AMOS program from 17 Bit is just up your alley. Enter your full date and time of birth, and this will give you your Chinese star sign and a personality description, and the accuracy with which it does this is staggering. For example, I am charming, witty and an exceptional conversationalist who doesn't like children. Uncanny!

Available from: 17 Bit Software, 1st Floor Offices, 2/8 Market Street, Wakefield, West Yorkshire WF1 1DH. Tel: 0924 366982. Disk no. 2618. Price: £2.00 (including P&P). Compatibility: All Amigas.

72%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DAY
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v3.21
AMOS THE CREATOR
MING SHU
MinjiDo

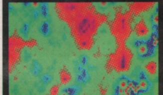
A SUMMARY OF THE RAT PERSONALITY:-
Leadership, stimulation and a love of novelty are all characteristics of the Rat. As innovator, good with new ideas - but not too proficient at following them through. Has a knack of being able to see through to the knot of a problem, and usually producing a solution. Excellent conversationalists, they are apt to a bit of name dropping!
Cont...

ANDY'S WB3 UTILITIES

workbench utilities

There are more and more of these compilations appearing all the time, meaning even better value for those of you who want to build a staggeringly huge library in as little time as possible. This one, from 17 Bit, features no less than 17 complete utilities for you lucky AGA owners out there. From the top you have AGA Test, which displays every colour possible. Alert Timer adjusts the internal clock. Animan displays an animated head which reads system messages to you via the Amiga Speech library – not actually present in Workbench 3. The ever present Bblank, which gives your screen a black border. The popular Degrader forces your machine to think it only has 512K of RAM, and FakeMem makes your machine pretend that areas of RAM are fast memory.

Kill AGA is another way of pushing the machine down a few steps to make it more compatible with older software. New Menu gives you new look menus, as the title suggests, and Plasma 256 gives you a screen of horrendously garish colours. What more could you ask for? Most of the utilities on here are more fun than useful. Worth checking out.



Available from: 17 Bit Software, 1st Floor Offices, 2/8 Market Street, Wakefield, West Yorkshire, WF1 1DH. Tel: 0924 366982. Disk no. 2622. Price: £2.00 (including P&P). Compatibility: WB3 Machines.

71%

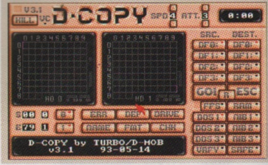
D-COPY V3.1

disk copier

For a long time *X-Copy* has stood at the top of the mountain when it comes to disk copiers, but *D-Copy* has always been my personal favourite. Using a similar layout to *X-Copy*, this utility combines pop-up menus and radio buttons to give you every kind of copy around, including three different DOS copiers, two nibble copiers and even an MS-Dos disk copier. There isn't a huge amount of difference between this and recent versions, save one or two bugs being ironed out. Even so, it's still one of the most reliable and capable disk copiers there is. These copiers are for backing up your own files, not copyright software! Remember: piracy is killing software development.

Available from: 17 Bit Software, 1st Floor Offices, 2/8 Market Street, Wakefield, West Yorkshire WF1 1DH. Tel: 0924 366982. Disk no. 2634. Price: £2.00 (including P&P). Compatibility: All Amigas.

91%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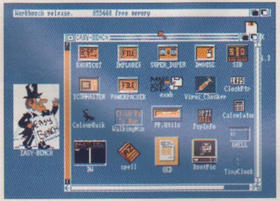
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EASY-BENCH

EASY BENCH

utilities suite

This two disk monster contains almost every program you will ever need in your Workbench environment. On loading, it effectively covers the Workbench system via a small Short Cut bar. Workbench comes with a varied set of tools, but there are often times when I wish they could have added more, such as a compression program, or a better disk copier. It's for people like me that Easy Bench exists – one of the most impressive collections yet seen on PD.

For your two quid you get (large intake of breath); SID 1.06, four different text and image viewers, a new icon generator, a calculator, the famous compressor Power Packer, Tetra Copy – a disk copier that lets you play Tetris while the work is being done, Super Duper – a back-up program, Pop Info – a small button that sits on your desktop and displays a short information file on your Amiga when selected, Sys Info v3, a keymap editor, Last Hope – the recovery program for accidentally deleted files, AZ Spell – a spelling checker for text files and Multi-Ripper 2, for all your ripping problems. You've got to admit – it's a cracking bundle.

Available from: 17 Bit Software, 1st Floor Offices, 2/8 Market Street, Wakefield, West Yorkshire WF1 1DH. Tel: 0924 366982. Disk nos. 2624(A/B). Price: £4.00 (including P&P). Compatibility: All Amigas.

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U61...D-Paint Fonts 2
U62...Med 3.20
U63...Direct Anim Creator
U64...Crossword Designer
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G12...Asteroids
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G27...The Tennis Game
G28...Flaschbier
G29...Buck Rogers
G30...Greyslayer
G31...7-Tiles
G32...Mega Comp 1
G33-34...Star Trek 1 (2)
G35-37...Star Trek 2 (3)
G38-39...Mechforce (2)
G40...Klondyke
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G59...Games comp 8
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G209...F.R.A.C.
G210...The Golden Fleece
G211...Legend of Lothian
G212-214...Timelords 6-8
G215...Amos Games 1

SLIDES

S1...Ham Pics Show 1
S4...Madonna slides
S5...Moviestar slides
S6...Party Disaster
S8...Immaculate Collection
S9...Simpsons Slides
S10-11...Channel 42 (2)
S12...Bruce Lee Slides
S14...Adams Family
S15...Viz Mag Slides
S16...Boris 13
S17...Docklands Jarre
S18...Dr Who Demo
S19...Napalm Death
S20...Nasa Slides
S21...Exodus 3D Slides
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S27...Demons Slides
S28...Total Recall
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S48...PD Slideshow
S49-52...Terminator (4)
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S71...Creature Comforts
S72...The Wonder Years
S73...Watership Down
S75...Ferrari 348 Pics
S76...Belinda Carlisle
S77...Cher Slides
S79...Freddies Dead
S80...Wendy James Slides
S81...The Invisible World
S82-83...Terminator 2 (2)
S84...Fantasy Pics
S85...Gulf War Slides
S86...Magical Pics
S88...Gulf War Tribute
S89-90...S/Thing Fishy (2)
S91...Eldorado Slides

ANIMS

A1...Probe Sequence
A2...Ghost Pool
A3...Jogger + Magician 1
A4...Gymnast Demo
A5...Fractal Flight
A6...Basketball Demo
A8...Walker Demo
A9...Magician 2
A10...Pugs In Space
A11...Luxor Teenager
A13...Juggler Demo
A16...Cool Cougar
A17...Mono Cycle Anim
A18...Robocop Anim
A20...Mayhem On Wheels
A21...Jugette 2
A22...Shuttlecock Anim
A23...T-Pot Anim
A27...Fleet Manouvre
A28...Billiard Anim
A29...E/Prise Leaves Dock
A30...Starwars 2 Anim
A31...Star Trek Anim
A32...Fraxion revenge
A34...Madonna Anim
A35...Stealthy Anims 2
A36...Raiders Of The L/Ark
A37...Bugs Bunny Show
A38...Iraq V's UK Anim
A39...Mike Tyson anim
A40...Knight Anim
A42...Walker 2
A43...Walker 3
A45-46...Light Cycle (2)
A47...Exploding Head
A48...Police Car Chase
A49...Top Gun Demo
A50...Animators Demo
A51...5 Ways To Kill a Mole
A52...Another 5 Ways
A53...Batman The movie
A54...3D Spaceship
A55...Mr Potato Head
A57...Camouflage
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A63...Amy V's Walker
A64...Real Pinball Anim
A65...Franklin The Fly
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A73...Spaceshuttle Anim
A74...Ghostbusters + Horse
A76...Alarm Anim
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A78...Piano Anim
A79...Dart Anim
A80...Bad Bird Anim
A81...Holiday Anim
A82...Fillet The Fish
A83...The Boings
A84...Clothes Peg
A85...Miners Anim
A86...Pocket Watch Anim
A90-93...The Movies 2 (4)
A95...My TinToy
A96...T-Pot 2 Anim
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PART 3

In the third and final instalment of our stick-tastic round-up, we give you even more waggle! So, sit back and plug in.

Joysticks

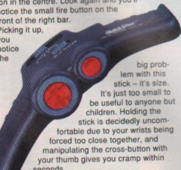
BUYERS GUIDE

The real difficulty with reviewing joysticks is that everyone's tastes are different. Some people really go for great, hulking desk mounted beasts with plenty of swing and more fire buttons than you could ever use, whereas others prefer miniature palm held sticks with minimum frills and maximum accuracy. With this in mind, each joystick reviewed in this guide has been tested and commented on by a range of games players. You know you can trust us.

FLIGHTGRIP 1 • QUICKSHOT • PRICE: £9.99 • TEL: 081 365 1993

Every so often, joysticks go through a bit of a redesign. They seem, like fashion, to go through periods when a certain style is in vogue. For a while everyone came out with 'helicopter grip' sticks, and then came the arcade-style shaft with a ball on top. At present, joypads seem to be all the rage, and long-standing joystick kings, Quickshot, were the first to try to redesign the joypad, and here's the result.

At first glance, it looks like a very small pair of handlebars, with a small cross and a red fire button in the centre. Look again and you'll notice the small fire button on the front of the right bar. Picking it up, you notice the big problem with this stick – it's size. It's just too small to be useful to anyone but children. Holding the stick is decidedly uncomfortable due to your wrists being forced too close together, and manipulating the cross-button with your thumb gives you cramp within seconds.



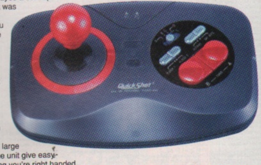
VERDICT:
Nice idea, but not comfortable enough to be practical.

45%

MAVERICK 1M • QUICKSHOT • PRICE: £15.99 • TEL: 081 365 1993

How many times have you played a coin-op and wished that your joystick was as precise and sturdy as the one in the machine? Now you can have one as good as the arcades with the Maverick – one of the best joysticks we've seen.

Set on a wide base, with four decent suckers, the unit is designed to be used on a tabletop – the size of the base makes it impractical to hold. A large shaft with an easily gripped plastic ball on top gives you all the control you could want, and the two large fire buttons on the right of the unit give easy access to firepower, providing you're right handed.



Full autofire is included in this superb piece of stick work, rounding off a box of tricks that's going to improve your game playing no end.

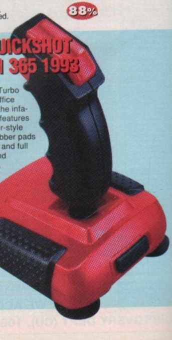
VERDICT:
Smooth and precise – the kind of stick you've always wanted.

88%

QUICKSHOT II TURBO • QUICKSHOT • PRICE: £6.99 • TEL: 081 365 1993

Like the Cheetah 125 last month, the Quickshot II Turbo is one of the long standing favourites of both this office and the computing world in general. Successor to the infamous Quickshot 1 (no surprises there!), the Turbo features six high quality microswitches, contoured helicopter-style grips, a striking red base complete with dimpled rubber pads to improve grip, front and top mounted fire buttons and full autofire. In 1986 it was a bit of a luxurious stick, and sold in droves. Even now, it still seems to sell well, remaining popular over all formats. But how does it compare to today's modern stuff?

Not at all badly, to be honest. Even after eight years it still handles as well as it always did. The rubber grips really do seem to add traction which is excellent for those sweaty shoot 'em ups. While not perfect, it is a completely serviceable stick with enough control to make it viable.



VERDICT:
An old favourite still shines through. Good value, too.

79%

INTRUDER 1 • QUICKSHOT • PRICE: £27.99 • TEL: 081 365 1993

Most simulation players take their games very seriously indeed. That's why there is a market for joysticks like this. It may look like a vacuum cleaner gone wrong, but look closely and you'll see that it is in fact a joystick designed for use with helicopter flight sims, and it's in this environment that it works best.

'Gimmick' was the first word that sprang to mind when this was taken out of the box, especially after seeing the autofire speed controllers (disguised as helicopter trim controls) and the clear perspex cover over the top mounted fire button, that springs open when another, smaller button is pressed. Picking up the stick, and feeling the massive amounts of travel the unusually mounted shaft offers, I had my doubts. All those evaporated when I loaded *Gunship 2000*, though.

This stick really does add a lot of atmosphere to a game. Helicopters can be sluggish in response times anyway, so the travel doesn't really cause any problems. My only concern is the suckers at the front of the base aren't too effective, and pulling back on the stick too hard can cause the base to pull off the table. Otherwise, what a stick!

VERDICT:
If you like helicopter sims, it's the one for you. Otherwise, forget it.

83%

PYTHON 1 • QUICKSHOT • PRICE: £10.99 • TEL: 081 365 1993

The Python 1 is a perfect example of when to leave well enough alone. The Quickshot II was a fine joystick, but QS still tried to better it with the Python – and failed.

A lot of time has obviously been spent on the shape of the stick, as it fits very snugly in the palm of the hand, offering you a secure and comfortable grip. The twin fire buttons (one on top of the main shaft and one in a trigger position) are moulded to fit the fingers, and the whole thing feels right. Well, almost right. The plastic is light and feels a little too delicate to withstand any serious bashing, and the shaft itself seems to be only minimally supported, so the centre return is flimsy, and far too easy to move against. As a result, you'll spend a lot of your time trying to return to centre, only to overshoot and select the opposite direction. Even if you use the Python 1 M (the microswitched model) you'll do the same thing, only this time the stick will click to let you know you've done it.

VERDICT:
Nice shape, shame about the feel.

61%

SIGMA RAY • LOGIC 3 • PRICE: £13.99 • TEL: 081 900 0024

It's blue, it has loads of fire buttons and it's styled like a Porsche – it's the Sigma Ray from Logic 3, and it's a really nice little stick. The rounded base allows it to be held in the hand, and the four base suckers let you attach it to a table. Either way, the five fire buttons (two mounted on the base and three on the moulded helicopter grip) provide enough firepower for even the most psychotic amongst us.

The autofire switch can be easily found by the thumb at the top of the shaft, and only affects four of the five buttons – a small stud button remains single shot either way. The stick feels nice in the palm, and the amount of travel feels about right, there's no overshoot. The firebuttons are fairly responsive too with little or no thumb ache developing. It's a cool looking stick, and responsive enough for anyone's needs.

VERDICT:
A very comfortable stick to use.

82%

FOOT PEDAL • SPECTRAVIDEO • PRICE: £19.99 • TEL: 081 900 0024

It had to happen at some point. After seeing so many moulded and styled joysticks for the hand, Quickjoy have come out with a joystick for the feet. Designed initially for driving games, the programmable nature of the unit means it can lend itself easily to many other games. For your 20 quid, you get a small grey box with three microswitched pedals, laid out in the format of your average manual car. Two leads extend from the rear of the unit, one which plugs into the computer and one which the joystick plugs into.

The Foot Pedal works by controlling up to three different joystick directions, each assigned to a pedal. You need to be careful when setting up your directions, as once one is assigned to the pedals it can't be accessed by the joystick.

The Foot Pedal is surprisingly effective for driving games, I have to say. Particularly those that require you to push forward to accelerate. For other games, well, if your feet are fast enough, why not?

VERDICT:
A good idea that works well.

81%

CUT, TICK & POST...CUT, TICK & POST...CUT, TICK & POST

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- ☐ ^+ **V977 FILE & HD No 5-6** Next Excellent collect of HD utilities. (2)
- ☐ ^+ **V979 NCOMM v3.0** Is a communications program based on Comm v1.34 with lots of very nice enhancements
- ☐ ^* **V980 KICK v1.3** Will down grade A500+, A600, A1200 users machines to run software that would NOT normaly work. Turns them into a Workbench 1.3.
- ☐ ^+ **V983 MEGA CHEATS v3.0c** Now contains over 500 cheats.
- ☐ ^+ **V984 PROTRACKER v3.0a** The latest updated version from Norway. Various bugs fixed and 70 new features
- ☐ ^+ **V988 ZIPBENCH v4.0** Another Workbench replacemant but contains excellent utilities like, powerpacker v2.2a, powerplayer, Sysinfo, VirusX, Archiver, b-Base, BootIntro, Degrader, Fist Aid Box (2)
- ☐ ^+ **V994 THE MONEY PROGRAM v1.5** Features include upto a maxium of 60 accounts, upto 50 direct paymenys.
- ☐ ^+ **V1000 GRAPHPRO v1.0** Written with Amos pro by David Jordan. Basically takes a set of data, plots them on a graph.
- ☐ ^+ **V1001 VMORPH v2.21** Will allow you to create smooth morphs/warps between two different images over a period of frames to create an animation.
- ☐ ^+ **V1002 RAMOS PRO** If you have Amos Pro then this disk will make your programs Boot without the program disk
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- ☐ ^^ **V1005 WORKBENCH 3.0 UTLS** Contains the fist batch of A1200 and A4000/030/040 Utility programs
- ☐ ^+ **V1009 TURBO TEXT v1.1** Excellent Word Processor. Very impressiveversion
- ☐ ^+ **V1013 POOLS PREDICTION** Need another helping hand with the Pools then this is it.
- ☐ ^+ **V1016 OCTAMED v2.0** Music editor which was designed for making music for programs. (FULL & NEW VERSION)
- ☐ ^* **V1017 POST v1.86** An excellent Postscript Interpreter for the Amiga which implements the full Adobe language (3)
- ☐ ^^ **V1021 WB 3 SCREENS** Enhance your Workbench disks backgrounds with theses nice full coloured pictures
- ☐ ^+ **V1022 LITTLE TRAVELLER v1.1** Shows a world map & you can select any country for travel information, Zooms up another close up map with more detail.
- ☐ ^+ **V1023 QUIZ** Contains Questions & Answers with the option to add
- ☐ ^^ **V1024 MANDELSQUARE v1.6** Generate enhanced AGA Mandelbrot set images, requires numerical caprocessor. You can create 256 colour coloured pics
- ☐ ^* **V1025 TERM v3.1** Comm prgroam, Xpr transfer, filetype ident after download, cut & paste, paint-and-click, auto upload/ download, VT102/VT220, Ansi emulation, powerfull phone book & AGA support (3)
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- ☐ ^+ **V1035 FES BASIC** Just in time for all the new machines which do not have Basic with thier machines any more.
- ☐ ^^ **V1037 (AGA) A1200 WB HACKS** An excellent collection of Utilities & Hacks
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- ☐ ^+ **V1097 TITANIC CHEATS v1.40** Contains 950k of raw data which is just a whisker under 600 games.Well presented
- ☐ ^+ **V1101 RJ UTLs** This disk contains helpful image processing and painting programs. Like Perfect Paint v1.34, Image Workshop v1.3, an IFF Manipulator.
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- ☐ ^+ **1420 DTRIS** If you want a1 or 2 player Tetris this has to be 1 of them.
- ☐ ! - **1747 LLAMATRON GAME 2001** By Jeff Minter & an excellent production.
- ☐ ^+ **1749 SCRAMBLE** "The Original" Remember that old classic gam ufise
- ☐ ^+ **1977 POM POM GUNNER** Shoot down world war II air planes in this Operation Wolf
- ☐ ! - **2018 JETMAN** Spectrum classic converted to the amiga. with all the original sounds.
- ☐ ^+ **2022 SEA LANCE** The first Silent Service type sub war game on PD
- ☐ ^+ **2054 ATIC ATAC** A rendition of the game from the original Spectrum
- ☐ ^+ **2162 BATTLE OF BRITIAN WAR** GAME 2 Strategy war games.
- ☐ ^+ **2164 DUNGEON ON NADROJ** This is the best D&D adventure type game. Load Wb
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- ☐ ^+ **2278 CARD SHARP** A professionally presented selection of solitaire games.
- ☐ ^+ **2280 DIPLOMACY** Classic strategy game loosely based on World War 1. 2Mb
- ☐ ^+ **2313 REVENGE OF THE MUTANT CAMELS** The ride of a life time with camels
- ☐ ^+ **2396 PETERS QUEST** Is truly an excellent platform game for all ages.
- ☐ ^+ **2411 TOTAL WAR** Strategy world conquest type game. 1 or more players
- ☐ ^+ **2432 GOLDEN OLDIES** Galaga, Galaxian, Space invaders, Asteriods, Batty & Missile Command.
- ☐ ^+ **2436 DRAGON TILES** Mahjong is a ancient chinese game with coloured tiles
- ☐ ^+> **2447 COINDROP** Fruit Machine simulator with various gamble modes.
- ☐ ! - **2448 CRAZY SUE** Another first rate cute schoolgirl platform game
- ☐ ! -> **2450 SMASH TV** Simular to the arcade machine. Graphics & sound
- ☐ ^+> **2480 FRUIT MACHINE 2** As near as poss to the Arcade machines
- ☐ ^+ **2483 INTRUDER** is a Multi level Berserk clone with smooth graphics.
- ☐ ^+ **2484 CATACOMB v1.7** Graphical Adv set on a small island in the land of LXOUSIA
- ☐ ^+ **2485 IRON CLADS** Updated Strategic War Game which is heavy on your mind (2)
- ☐ ^+ **2491 LEGEND OF LOTHIAN v1.02** An excellent adventure game in the vein of Ultima.
- ☐ ^+ **2498 AMOS CRICKET** is an excellent arcade cricket simulator with nice graphics
- ☐ ^+ **2534 BATTLE CARS II** Get behind the wheel of a heavily armed car as you race round courses 2 players with the computer link
- ☐ ^+ **2535 SUPER PACK MAN 92** The best PackMan to date with supersmooth scrolling
- ☐ ^+ **2614 TETREN** is a 1 or 2 player Tetris game. The 2 player game is Head 2 Head
- ☐ ^+ **2615 WAR** Strategy war game in which you control a fleet of space craft
- ☐ ^+ **2617 GOLDEN OLDIES 2:** Croak, is a 1 or 2 player Frogger, BiPlanes is 1 of the most addictive games we have played here. Trail-Blazer, as the C64 Classic. Scamble.Shootemup
- ☐ ^+ **2620 DR MARIO** You must move coloured pills down the screen. 3 in a row go's
- ☐ ^+ **2621 ETERNAL ROME** Start the Roman Empire from 32BC. Build fleets, armies & attack
- ☐ ^+ **2622 DONKEY KONG** Original platform game in which you must rescue the girl
- ☐ ! + **2674 INTERPID** In the Artic ice you control a tank on a mission to rescue hostages
- ☐ ^+ **2676 MORIA v5.4** Loads of new features, better graphics, larger dungeons, screen updates, overview of dungon's map
- ☐ ^+ **2710 CLASH OF THE EMPIRES (2) v2.1** Strategical War game By 1.A.Sear
- ☐ ^+ **2712 ACT OF WAR** Simular to Laser Squad. You control a team of special troops.
- ☐ ^+ **2715 TANK ATTACK** This is a 1-4 player version of the Classic Cartridge game Combat.
- ☐ ^+ **2716 RESCUE** Spaceship game simular to Scramble. Excellent graphics
- ☐ ! - **2721 E-TYPE II** An Asteriods adventure where you jet around collecting weapons
- ☐ ^+ **2724 NEIGHBOURS** This is the best graphical adventure game to date (2)
- ☐ ! ->**2732 CYBERNETIX** Defender, Star Gate style game with super fast scrolling
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- ☐ ^+ **2842 CRAZY SUE II** Sequal to the all time best selling PD platform game.
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- ☐ ^+ **2863 FIGHTING WARRIORS** A karate combat fighting contest game.
- ☐ ^+ **2876 ESCAPADE** Break bricks in a wall by hitting a ball with bat. Break Out
- ☐ ^+ **2932 NUMERIX** Enjoy puzzles / Tetris then this is a must. You have a scrabble board & you must place tetris blocks to get points.
- ☐ ^+ **2941 EXTREME VIOLENCE** Scrolls around much bigger than Smash TV
- ☐ ! - **2949 OBLIVION** is the closest I have seen to the original defender arcade game.
- ☐ ^+ **2987 BOMB JACKY** A conversion as the original Bomb Jack, it's as the best yet
- ☐ ^+ **2988 BALDERS GROVE** Its here Boulder dash with a selection of levels that work fully
- ☐ ^+ **2991 VEKTOR** Tron Light cycles game with excellent graphics, sound
- ☐ ^^ **3023 UCHESS (AGA)** Do you love chess then try this. 4Mb & WB 3.0
- ☐ ^+ **3037 SSW** is a game for 2 based on Space Wars but with many extra features.
- ☐ ^+ **3038 TANK HUNTER** A 2 player Tank Attack game with various levels
- ☐ ^+ **3039 ASTEROIDS II v0.85** This is the best version of Asteroids I have ever seen, If you like Asteroids games then this is for you
- ☐ ^^ **3040 TETRIS (AGA)** If you like tetris, you need this disk. AGA graphics.
- ☐ ^+ **3075 18 HOLE GOLF (2)** The first excellent golf game. Select speed & power
- ☐ ^+ **3162 SON OF BLAGGER** This is a classic (64/Spectrum) platform conversion Can you remember how active it is to play
- ☐ ^+ **3214 UNIV CONQ** A strategy game where two human players battle for control of the universe. Status information is continually updated to allow the player to concentrate on strategy. Includes digitized pictures and sound.
- ☐ ^+ **3215 BATTLE STAR** A fun text adventure game like Zork. You start out on a space ship under attack and you must get to a planet.
- ☐ ^+ **3257 THE SUITCASE (2)** If you only buy one advature this should be it. Its excellent.
- ☐ ^+ **3280 BALL** This is an excellent simple two player baseball game which uses both mouse and joystick to control the players.

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- ☐ **ENVISION PUBLISHER** is a full featured desktop publishing program with scalable fonts, full object drawing, mouse support
- ☐ **GRAPHICS WORKSHOP** is a program for working with computer bitmapped graphic files it will handle PCX, TIFF and many more. Once an Amiga IFF picture is converted to PCX format use this and just take a look at the features. ☐ Windows or ☐ Dos

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^	Works with Workbench 3.0
^^	Workbench 3.0+ Only
>	Not A600 Machines
-	Not A500 or A600 Machines
!	Not Workbench 3.0
(??)	Requires ?? Amount of disks
??Mb	Requires ?? Amount of memory

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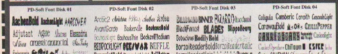
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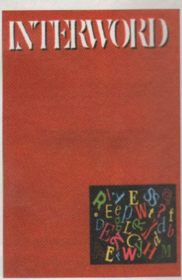

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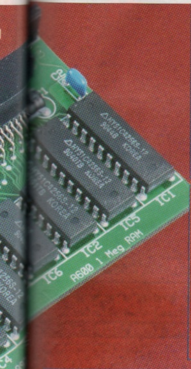

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AMIGA CD32 SPECIAL

The launch of the Amiga CD32 console threatens to redefine games playing as we know it. With AGA graphics, an '020 processor and 2Mb of RAM, the new machine looks set to revolutionise home entertainment with its ability to play computer games, music CDs and blockbuster movies.

To help keep you abreast of all the latest developments, we've put together this special Amiga CD32 supplement. Over the next 32-pages, we'll be taking a close look at Commodore's new 32-bit console, giving our own frank opinions on whether or not you should buy one. Plus, we'll also be taking a look inside the machine to see what makes it tick and reviewing the first couple of CD32 games. As if that wasn't enough, there's also a comprehensive listings section where we preview all the up and coming games you can expect to be released over the next eight months. Enjoy.

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10 INSIDE JOB!
We delve into the inner most recesses of the Amiga CD32 and show you what makes it tick.

12 WHAT THE INDUSTRY THINKS
So what does the Amiga fraternity think of Commodore's new console? We got on the bat-phone to some of the games industry's key figures for their opinions.

What are these men smiling about? Well wouldn't you be if you were launching the CD32 console?!

14 WHAT WE THINK
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16 COMING SOON
After our round-up of all the Amiga ports last issue, we take a more in-depth look at some of the stunning new releases that are coming your way soon. And, surprisingly, there's more than just games in the offing...

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The most up-to-date checklist on what's in development for the CD32.

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30 FUTURE DEVELOPMENTS - SINK OR SWIM
Is the Amiga CD32 the machine that will take Commodore to new heights or a white elephant that will be the final nail in their coffin? A developer offers his own personal opinions.

EDITOR
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The AMIGA CD32 SPECIAL is free with the September issue of CU AMIGA and must not be sold separately.

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AMIGA CD32

Is the Amiga CD32 the future of home entertainment or a poisoned chalice that will be the downfall of Commodore? Jolyon Ralph checks out the new 32-bit Amiga CD console.

Sega and Nintendo said it couldn't be done, but Commodore have proved them wrong by bringing out the worlds first 32-bit CD-ROM based console, and at an affordable price, too. By combining the 32-bit technology of the A1200 with a fast double-speed CD-ROM drive in a small Megadrive-style box, they've effectively stolen a march over their competitors – but is the new machine any good?

It certainly looks unlike any other Amiga, and at first glance you could be forgiven for thinking it was a Megadrive. Only the big '32 Bit' and 'Amiga CD32' logos point to the power contained in the dark grey box. One thing the CD32 isn't, is the CDTV-2. CDTV was designed to do something totally different – a home multimedia system for entertainment, education, reference and productivity, and was never really given long enough to prove itself.The CD32, on the other hand, is purely a games machine. It's a ready-made market and Commodore have come out with the machine at exactly the right time.

The CD32 is simple to operate. Open the flip-top lid to reveal the tray for the CD. The CD32 does not require the caddies that annoy most CDTV and A570 users (although I must admit I prefer the caddy system – discs are too easily scratched without caddys), and doesn't have a built-in lens cleaner like CDTV, so be prepared to regularly clean the lens on the CD32 if you buy one, especially if you live in a house with smokers. CD lens cleaning solutions or special CD cleaning discs are available from most HiFi stores.

Powering up the CD32 reveals a rather pretty title screen using 256 colours and colour cycling, along with an irritating and somewhat out of place musical ditty. Both of these stop as soon as you load a CD and lower the lid. What happens next depends on the type of CD you put in.

NOT SO NEW

The first batch of CD32 titles will be enhanced versions of classic Amiga games (*Robocod, Pinball Fantasies*). These will use CD quality audio and oodles of animation, sound and extra graphics. Some will have extra levels, and a few, such as *Microcosm* from Psygnosis, have been developed exclusively for CD. No finished CD32 titles were available in time for this review, although several (including *Diggers, RoboCod and Pinball Fantasies*) should be finished by the time you read this. [See reviews elsewhere in this supplement - Ed]

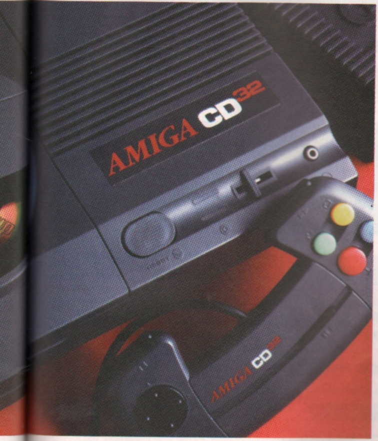
CD32 disks contain a data track which contains program data in exactly the same way that floppy disks and hard disks do, and the CD32 will 'boot' from a CD in the same way any Amiga will boot from a floppy disk. Unlike floppy or hard disks the CD can also contain up to 98 other audio tracks. These are identical to audio tracks on a music CD, indeed you can play these tracks on CD32 and CDTV discs in a standard CD Audio player (although be careful, some players will try and play track 1 which can be extremely noisy!) If you remember what it was like playing Spectrum or Commodore 64 tapes in your hifi at full volume you'll know what I mean.

Most standard CDTV titles will work in the CD32, although many require a mouse (luckily the CD32, unlike CDTV, has standard mouse/joystick ports so you can plug in any standard Amiga mouse). Some titles, especially PD collections, require a floppy disk drive, and currently no floppy drive can be connected to CD32, although one should be available by the end of the year.

CD32 will also play your Audio CDs. Inserting an audio CD brings up a smart menu similar to

JARGON BUSTERS

- **AGA : Advanced Graphics Architecture - The chips in the A1200/A4000 and CD32 that allow up to 256 colours to be displayed on screen.**
- **CD-ROM : Compact Disc - Read Only Memory - A CD, identical in appearance to your Dire Straits disc, but containg computer data.**
- **CDTV : Commodore Dynamic Total Vision - Commodore's previous attempt at a CD-ROM based Amiga. Aimed at the home 'edutainment' market it was a slow seller and is no longer in production.**
- **CDXL : A format for simple partial screen motion video from CD on CDTV and Amiga CD32.**
- **FMV : Full Motion Video - Using MPEG to play back better than VHS quality video from a CD.**
- **Jurassic Park: A film with some dinosaurs in it.**
- **MPEG : Motion Picture Experts Group, they decided on a format for highly compressed video that can squeeze video to small enough files to play from CD.**
- **MULTISESSION: Writable CD discs can be written to several times before they are full (data can be added, but previous data cannot be altered or removed). A multisession drive is a drive capable of reading this type of CD.**
- **NTSC: National Televison Standards Committee (USA): American TV standard, incompatible with PAL (UK).**
- **PAL: Phase Alternate Linescan, which is the video system used by your TV if you live in the UK and most of the more civilized parts of Europe.**
- **Photo CD: A Kodak system for storing up to 100 photographs on a writable CD. You can take your 35mm film and get it transfered to CD .**
- **SECAM: The French TV system, similar to PAL. Used in France, Russia, and a few other equally interesting places.**



the one on the CDTV, but it reacts faster and is simpler to use than its predecessor. Like CDTV you can control CDs from the joypad, but there aren't any buttons on the main unit to control CD play. CDTV had problems with a few audio CDs, especially extra-long CDs with lots of tracks. All CDs I tried on the CD32, including a couple known to cause problems on CDTV, worked fine. The audio quality, when put through an amplifier or into a TV with reasonable speakers, is excellent.

CD+G discs, special audio CDs with simple graphics (not to be confused with the obsolete CDVideo discs) can also be used. These come up with simple graphic sequences. Most CD+G discs are karaoke discs, and both CD+G discs I tried in Amiga CD32 worked without problems, in fact the CD+G code has been improved since CDTV. There are no more errors in the graphics decoding, and the control has been greatly simplified.

GOING, GOING, GONE

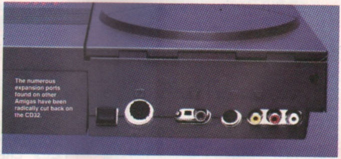
In producing a low-cost Amiga console it is inevitable that things had to go. The usual complement of expansion ports found on every Amiga since the Amiga 1000 has been cut down to the bare minimum, and some would say below the minimum, required. The RGB port has been removed, although a S-VHS output is now supplied which gives an extremely good picture on S-VHS TVs and monitors. With S-VHS, RF and Composite it is now possible to connect the CD32 to almost any TV or video system and obtain superb quality output. Many modern TVs have S-VHS inputs at the front of the TV, so connecting the CD32 doesn't require all that tedious messing around with SCART sockets and cables hanging out of the back of your TV that previous machines needed. Even the RF output quality is good, so whatever TV you have, your CD32 will work. The S-VHS output can also be connected to any monitor that has separate Chroma and Luminance inputs, such as the 1084S and even the old 1701 C64 monitors, although a special lead is required.The parallel and serial ports have been removed, so you can't connect external modems, printers, digitizers, and so on. Obviously most of these are rather pointless on a games console, but there are two things that some people will miss. No serial port means no machine-linked games, and no parallel port means the CD32 can't be linked to another Amiga with the Parnet network cable to transfer data from CD to Amiga (many CDTV owners use this to transform their CDTV into an external CD-ROM drive on their Amiga).

Most suprising is the lack of a floppy disk drive port, especially considering the amount of games already on Amiga disk format. It may be that the cost of adding the floppy drive interface circuitry was too much, or possibly it was pressure from software publishers, eager to convert over to unpiratable CD-ROM and unwilling to see the machine able to run floppy (and along with that pirate) software too. Whatever the reason it makes the CD32 a totally closed system. You can't put data into it, except on CD, and you can't take data out of it onto disk or via in/out ports.

The CD32 also has standard mouse and joystick ports, something sorely missed from CDTV. The supplied controller is rather Nintendo-esque in design, down to the buttons on the top left and right sides, plus four fire buttons, a start/stop button and an 8 way direction pad, enough for the most frantic of beat-em-up games. The controller links to a standard mouse or joystick port, and apparently will work with any Amiga when used with the right driver software, so you will no doubt see lots of software starting to support the new joypad.

The controller comes with a nice long lead, it's encouraging to see someone putting some thought into how the unit will be used, although there's definitely some left-handed militant designer at Commodore, as the joystick/mouse ports are on the left-hand side (as on the A4000) to the irritation of right-handed people like myself.

Next to the Joystick ports is a mysteriously labelled 'aux' socket that turns out to be nothing more than a standard A4000 keyboard socket. Annoyingly, the black CDTV keyboards do not work, only the white A4000 keyboards which are not available seperately. Commodore say that other expansions including virtual reality 'gloves' are being developed for this port, but to be honest, I don't believe them.



The numerous expansion ports found on other Amigas have been radically cut back on the CD32.

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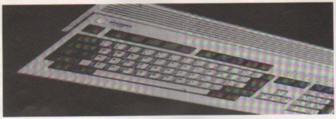

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Commodore 1084 ST	14"	.31	LOW	YES	15KHZ	POA
Commodore 1960	14"	.31	MED	NO	MULTI	POA
Commodore 1940	14"	.39	MED	YES	DUAL	POA
Commodore 1942	14"	.28	MED	YES	DUAL	POA
Microvitec Cubscan	14"	.31	MED	NO	MULTI	POA
New Horizon Vanilla	15"	.28	HIGH	NO	MULTI	POA
New Horizon Vanilla	17"	.31	HIGH	NO	MULTI	POA

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AMIGA CD32

Unlike the CDTV, the CD32 comes with mouse and joystick ports.

BOX OF TRICKS

The CD32 does have one large monster-sized expansion connector, which carries all the relevent lines to add all the missing ports to with an external board. At the CD32 launch some developers were running from machines fitted with 'debug' boards connected to the back containing all the missing interfaces. This will apparently become the basis of a Commodore 'base unit', containing all the ports and interfaces, along with floppy disk and ram expansion, to make the CD32 into a true Amiga computer.

This expansion also contains the space for the add-on FMV cartridge. This will be out before Christmas, at under £200, if you believe Commodore's PR machine. Commodore are working hard to try to beat Philips to the market with FMV (Philips are currently running over 9 months late).

Until then the CD32 is capable of CDXL video, similar to the 1/4 screen video seen on the CDTV, but because of the faster processor, better chipset and, most importantly, the double speed CD ROM drive, it is capable of 3/4 screen full motion video purely in software, light years ahead of the atrocious 8 colour dithered video that the Sega CD inflicts on its users.

Unfortunately, CD32 does not support the Kodak PhotoCD format. The hardware is ideal for PhotoCD support, all that is needed is software to display PhotoCD images, and if it had a floppy disk drive I'd write it tomorrow. It appears that Commodore have had problems licencing the PhotoCD rights from Kodak, or again it may have been a cost issue, PhotoCD costing too much to implement at this stage. Whatever happened, it's inevitable that PhotoCD will be supported sooner or later as the hardware is capable of supporting the multisession XA format discs that PhotoCD

CD COMPARISON CHART

	CD32	CDTV	CDi	Sega MegaCD
Price (RRP)	£299	£299	£499	£399 (inc Megadrive)
Arcitecture	32bit	16bit	16bit	16bit
Processor	68EC020	68000	68070***	68000
Procesor Speed	14Mhz	7.14Mhz	16Mhz	12Mhz
RAM	2Mb	1Mb	1Mb	64Kb(!)
CDROM Speed	Double	Single	Single	Single
CD Audio Support	Yes	Yes	Yes	Yes
Colours Available	16Million	4096	16Million	512
Max on screen(*)	256	32	256	64
RF (TV) output	Yes	Yes	Yes	Yes
Composite Video out	Yes	Yes	Yes	Yes
S-VHS output	Yes	NTSC only	Yes	No
Keyboard socket	Yes	Yes	Yes	No
Floppy drive port	No**	Yes	No	No
Standard Joystick connectors	Yes	No**	No	Yes
Requires Caddies	No	Yes	No	No
Photo CD support	No**	No**	Yes	No
Movie CD support	No**	No	No**	No
CDXL support	Yes	Yes	No	No
Arcade-quality games	Yes	Some	Some	Yes
Reference/Serious titles available	Yes	Yes	Yes	No
Expandable to home computer	No**	Yes	No	No
Average title price	£30	£30	£50	£50

** Max colours on screen in standard modes for games etc.*
*** With optional add-on.*
**** 68070 is custom 16-bit 68000 variant*

NEW HARDWARE

Chunky-To-Planar

The new Amiga CD32 contains a rather special new piece of hardware called a chunky-to-planar gate array. If you program games you'll instantly go 'wow!', but if you don't, here's how it works, and why it's so good:

One of the problems with the Amiga graphics design is that it works on bitplanes. Each pixel on a 256 colour screen is broken into 8 bits which are stored in 8 different planes in different areas of RAM. What this means is that to plot a pixel on a 256 colour screen requires 8 separate writes to memory, which can be rather slow. The advantages of this system is that the bitplane system makes it much easier for parallax-scrolling games and for many other tricks that make Amiga games unique, plus you can have as many bitplanes as you require (up to 8).

The PC VGA standard uses a different system called byte-per-pixel. Each pixel on the screen is directly represented by a single byte in the display memory. Writing a pixel to the screen requires only one write to memory, so it is much faster than bitplane mode for most operations on 256 colour screens. The disadvantages are that it's inflexible (byte-per-pixel requires enough RAM for a 256 colour screen however many colours you want to use), and it's no use at all for scrolling games, especially those requiring parallax-type effects.

But for 3D games like flight simulators, or other games requiring fast graphics scaling, like *Wing Commander* the VGA system is better. *Wing Commander* on the Amiga draws its graphics to an imaginary byte-per-pixel screen then uses a complex algorithm to convert the finished VGA screen into an Amiga bitplane-based screen. This is unfortunately a rather slow process and results in poorer performance than the PC version.

What the Amiga CD32 gate array does is perform this VGA-style to bitplane conversion extemely fast in hardware, so your game can spend more time doing other things, resulting in faster and better games. When this hardware filters down the system to reach other Amiga models, it has another immediate benefit. Current PC emulators can't emulate VGA screens quickly because of exactly this problem. This hardware, combined with a PC emulator, should allow you to emulate PC VGA software far faster than is currently possible.

AMIGA CD32

images come on, in fact the multisession ability is little use for anything other than PhotoCD.

On the top of the CD32 case there is a 3.5mm headphone socket plus a volume slider for the headphones. As on the CDTV and A570 the volume slider only affects the volume through the headphones, and has nothing at all to do with the volume levels through the Audio out or the TV output.

Next to this are the power and disc activity lights, and a reset button, although you do not need to use this all the time. Most discs reset automatically when you open the flip top lid and take out the CD, but this can be prevented (when you have a product on more than one CD, or a product like *Video Creator* that allows you to use your audio CDs).

The power on/off button is on the back of the CD32 rather than on the power supply, which means the power supply needs to be turned off at the wall when not in use to avoid overheating. Where does this new machine leave owners of other Amigas? Well, if you own one of the older pre-AGA (A1000, A500, A500+, A600, A1500, A2000, A3000) Amigas you will not be suprised to hear that there's no way to get CD32 discs running on your computer. CD32 requires the AGA chipset, and none of these machines come with, or can be upgraded to, the AGA chipset.

CDTV can't be upgraded to run CD32 either. There is no way to upgrade a CDTV to the minimum standard required for CD32 as you would need to replace almost everything, including the CD-ROM, and the motherboard, that is of course if the replacement parts were available, which they aren't.

A1200 ADD-ON

With the Amiga 1200 and 4000, Commodore have said they will support CD32 emulation on these machines with add-on devices. The A1200 device will not connect to the PCMCIA port as previously thought, but will be connected via a trapdoor expansion (so almost certainly won't fit if you have a 32-bit RAM card or acclerator in your A1200) connected to an external expansion. It will also require replacement Kickstart 3.1 ROMS, but thankfully the ROMS are socketed on the A1200 so this isn't a major problem.

The A4000 device may not be a 'true' CD32 emulation at all, but will probably be a SCSI device with software CD32 emulation, although even on the 4000/040 this may not be fast enough to emulate the Chunky-to-Planar hardware (see box out on previous page). Most 4000 owners will probably want CD-ROM more for access to multimedia, PD and PhotoCD discs, and third party CD-ROM drives allowing access to all of these are already available for the A4000 (and all other Amigas except the A600).

All things considered, the new CD32 console is a lot better than most people thought it would be. Corners have been cut, but we're still left with an incredible machine and, more importantly, it's far in advance of anything Sega or Nintendo have got to offer. Hopefully, we'll soon start to see the release of original product for the machine, software that's been especially developed to take advantage of the console's architecture – then we'll really be in for a treat.

CD32 TECH SPECS

Here are those technical specs for the new Amiga CD32 in full.

Processor: 68EC020 at 14Mhz (same as A1200)

RAM: 2Mb CHIP ram (same as A1200) plus 1Kb of nonvolatile RAM for storing hi-scores, savegames, etc.

ROM: Kickstart 3.1 (Version 40.58) – similar to the 3.0 ROM in the Amiga 1200/4000, but with new libraries and other support code for the CD-ROM mechanism.

Chipset: AGA Chipset (as on Amiga 1200) plus new chunky-to-planar hardware (see below)

Video Out: RF (PAL, NTSC, or SECAM units available) to connect to aerial socket on your TV, Composite Video and Super-VHS outputs are available. There is no RGB monitor port on the standard CD32.

Aux Connector: Standard A4000-style keyboard connector. Other possible add-ons include multi-joystick adaptors, virtual reality 'gloves'.

Joystick Ports: 2 standard Amiga joystick/mouse ports capable of supporting digital and analogue joysticks, mice, trackballs and light pens as well as the new CD32 multi-button controller.

Expansion bus: Full expansion bus allowing possible further expansions including: Parallel/Serial/Floppy/RGB; Photo CD support; Full Motion Video (FMV) MPEG decoder board; Ram Expansion; Processor; Accelerators (68030/68040 etc); Hard disk interfaces (IDE, SCSI, SCSI 2, etc); Networking PCMCIA

CD-ROM: Top-loading double speed (300Kb/sec data rate) multisession CD drive. Unlike CDTV the drive does not require caddies and is not self-cleaning.

Compatible with:
CD-Audio; CDTV titles (most seem to work); CD+G audio discs with graphics (including Karaoke discs); CD specific titles; Movie-CD discs (with optional MPEG board)

CDTV TITLES

Commodore claim that over 60% of CDTV titles work on CD32, here are a few discs we tried and the results:

Lemmings	✓
Global Chaos	✓
Fine Art Collection	✓
Psygnosis 'AmigaCD' demo	✓
CDPD	✓
CDPD2	✓
Demo CD	✓
Battle Chess	✓
Dinosaurs for Hire	✓
World Vista Atlas	✓
Fun School 3	✓
Turrican II	✗
Curse of RA	✗

Fractal Universe -
Works fine except fractal generators require mouse.

Xenon II
Appears OK, some problems with shop sequence.

17Bit CD -
Requires floppy disk drive.

AMIGA CD32 RRP £299

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Excellent. Competitively priced for the technology you're getting.

EFFECTIVENESS ◆◆◆◆◆◆◆◆◆◆◆ 89%
It's true potential has yet to be explored, but the basis for a complete home entertainment system is there.

FLEXIBILITY ◆◆◆◆◆◆◆◆◆◆◆ 83%
Purely a games machine, but add-on extras will boost expansion possibilities.

INNOVATION ◆◆◆◆◆◆◆◆◆◆◆ 92%
First of its kind. Says it all really.

> *Potentially a world beater. Buy one now.*

OVERALL 91%

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CD-JOY

The CD-JOY was designed to allow CDTV owners the use of up to two ordinary Joysticks or one mice. The CD-JOY is an internally fitted interface, this means opening your CDTV to install.
Free Pandoras to 1st 5 customers quoting this number CD32

CD-JOY £25.00

AMIGA CD 32

Yes! the much rumored eagerly awaited Sega(tm) and Nintendo (tm) Stopper is now here. Specially enhanced AA Chip set and processor, 16.8 million colour palette. Free game and joypad controller.

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CD GOLD

FORMAT is changing its' name. ce forth its' new title will be CD LD. So, what is CD GOLD ? u own an Amiga CDTV or an Amiga a CD-Rom, then you will find CD LD invaluable as a source a up to the te reliable information on your hine. Be it A570, CDTV or any new based machine commodore may se in the future. CD GOLD is the ds first multimedia magazine on pact disk designed for Amiga CD rs. CD GOLD has much the same cture of any other magazine designed Amiga users but with major advances paper based variants. Interviews all live, more free software, more able demos, see hardware projects structed before your very eyes. Talk Amiga CD-Rom experts like Jolyon ph and Jim Hawkins and many more. pare for the next leap forward in iga Technology Buy your Copy of CD LD now ! The Pilot issue will be ilable in August. So if you have any stions regarding your machine that would like answered by the experts if you have .ny ideas or programs t you would like to be included then y not send them in to us and we will eeze them into the first issue.

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CDTV TITLES

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CDTV Multimedia pack **£270**
includes, mouse, caddie, keyboard, disk drive, remote controller and free software, including Fred Fish Disk.
CDTV Player with software **£170**

KEYBOARD.........	Turns CDTV into Computer.	£45
MOUSE................	Vital for any serious user.	£30
DISK DRIVE..........	Access Amiga 500 software.	£60
IR CONTROL........	You never know.	£30
AMIGA to Scart....	Plug CDTV into scart T.V.	£10
CD Scsi card........	Used to connect hard drives.	£90

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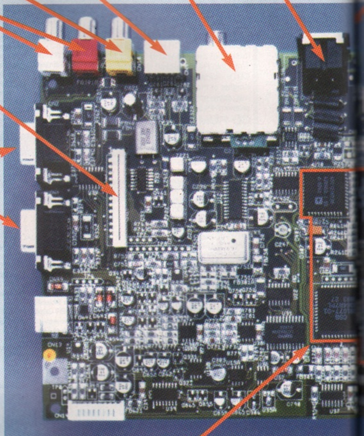
INSIDE THE CD32



Audio Left and Right. Standard RCA/ Phono sockets supplying a balanced 1 volt peak to peak signal for an external amplifier.

Video out. A composite video signal for connecting to monitors.

S-Video out. A standard S-Video socket for supplying component Y/C video to suitable equipment, such as an S-VHS video or monitor.

UHF Modulator which supplies a standard modulated signal for connection to a TV or Video. The channel can be altered via the adjusting screw which is accessible externally.

Power in. This connects to the supplied PSU and accepts the voltages required to drive the CD unit as well as the main circuit board.

This card connector is the slot where the CD mechanism's data cable is connected to the main board.

The games ports are standard 9-pin D-type connectors, but they will now support 11 button controllers

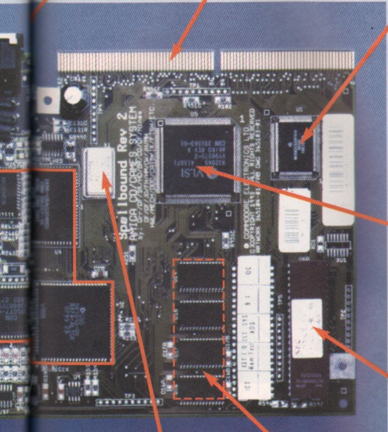
Armed with his trusty sonic screwdriver, Nick Veitch takes apart our beloved CD32. Will it ever work again we ask?!

The AGA custom chipset gives the CD32 the graphics power of an A1200, all in four surface mount packages.

Power switch. Cunningly allows you to connect or disconnect the power supply at the flick of a switch.

Expansion bus. This versatile interface port will allow the connection of a variety of devices, including the soon to be released MPEG board and the Convertor which will turn the CD32 into a CD-capable A1200.

The 68EC020 processor chip. This is the non-MMU version, but very few packages on the Amiga require an MMU, and certainly none of them are games. This is a surface mount version of the chip, so there is no way of replacing it.



This VLSI chip handles data transfer through the expansions and also incorporates the technology to convert between chunky and bitmap graphics types, which will prove very useful.

The CD32 ROM, which includes all the standard Amiga kernal, plus the rivetting colour-cycling display which executes on startup.This is a 1Mb ROM, although there is a vacant socket to the right, suggesting that some versions may have had 2x512k ROMs

This is the crystal which drives the CPU. Rated at over 28MHz, this will supply a clock frequency at about 25 MHz.

2Mb RAM organised as 4 x 512k packages. Any extra RAM will have to be added off the board.

WHAT THE INDUSTRY THINKS

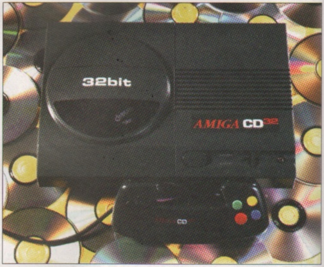
Reaction to the Amiga CD32 has been mixed to say the least. Here's a selection of comments from around the software industry.

Mindscape - Geoff Heath:
"I think it will do a lot for the industry, it's a great machine. Obviously it's a lot more expensive than a Megadrive or a SNES, but you do get a lot of technology for the money. It's going to be a tough brawl for Commodore as they're taking on Nintendo and Sega, but the technology is so good that I think they'll do well. I don't think the PC will be affected as it's a different market, mainly simulation and edutainment products."

Renegade - Tom Watson:
"There is every possibility that this will become the first mass market CD machine, but it's impossible to really say. Personally I believe that the various computer formats (Amiga, PC, CD-ROM) will co-exist happily. Commodore do have a distinct advantage over the consoles with its pricing, both of the software and the hardware, and if enough software houses support it early on then it should do really well."

ICE - Stuart Bell:
"We think it's a very positive move for Commodore and we're pleased to be supporting it. It all depends on how much marketing muscle Commodore puts behind it. Joe Public needs to realise what a great machine it actually is. They obviously need to spend a lot of money, although the machine is possibly good enough to sell itself without much of a marketing spend. It would be great, though, for there to be a lot of money and a lot of visibility. It is a dramatically better machine than the Megadrive, but look at the state Commodore are in. They don't have the money to stand up to Sega."

No Commodore machines has enjoyed such overwhelming support from publishers as the CD32.



BULLFROG - PETER MOLYNEUX:
"It's a bit of a shame that the CD32 is likely to be drowned out by machines like the 3DO. It shouldn't do as what you have to remember is that although those machines are great, they are very expensive. The CD32 should do well as long as the product comes out on time."

Team 17 - Martyn Brown:
"In our opinion the machine is a fantastic addition to the Amiga family and one which we will be actively supporting. We will be exploiting the exciting audio and visual capabilities of the machine. We firmly believe, however, that it is the game itself which is important rather than flashy animated sequences and digitised sound, something we shall not forget when releasing CD32 versions of our titles. There are a few development pitfalls in that people will be trying to use as much digitised material as possible and this doesn't always result in good software – check out Philips CDi for evidence.

If the machine is a large scale success then I would imagine that the majority of software houses will pull out of the 16bit Amiga floppy market, mainly because of one thing – piracy. With a machine that has virtually non-copyable media, the users know that a source of free/cheap software will be non-existent. Software houses know it too. People have to get it into their heads that copying games will kill off the old Amiga, the software companies don't need much of an excuse to drop an ailing market and the CD32 provides a bloody good one."

Thalion - Tony King:
"I think it's the hope for this industry, for various reasons. Piracy is obviously a major consideration. It's also a reply to the dominance of the console markets. It proves that European manufacturers can still come out with innovative ideas and it's very important for this industry to support someone like Commodore, who has had a fine pedigree as far as home computers are concerned and is probably responsible for most of the expansion of this industry. Commodore is a brand that parents recognise from when they bought their kids A500s and A1200s and they see it as a very good thing to step on to. Plus the price is nice.

The games that have appeared on the Mega CD so far all seem to be very samey-samey, whereas with the CD32 people are thinking about all the new and wonderful things you can do with it. I hope Commodore don't make the same mistake they did with the CDTV, trying to produce it as something exclusive to electrical and hi-fi shops. It should be a mass market machine and Commodore should attack the mass market. Not neccessarily like Sega but make it clear that a logical progression from an Amiga is a CD32. It's also important to make the younger age group aware of CDs and this should do that."

Archer Maclean:
"I'm seriously glad [Commodore] have finally got their act together. The trouble is a lot of developers are saying "Yeah, it's a very nice machine, CD-ROM and all that, but in a couple of years it'll be obsolete". I don't agree with that. It has the potential to do some stunning stuff and I'm definitely looking at working with it."

Revolution Software - Charles Cecil:
"We [the industry] owe a lot to Commodore, from the early days when the C64 was the primary machine, through to the dominace of the Amiga. Most of us basically built our companies on the Amiga, so I'm pleased that Commodore are concentrating on the Amiga and not the PC. Of course one of the main problems with software is piracy. Petty thievery has been so damaging to the Amiga, so I applaude the fact that CDs are not so easy to copy. Consoles are a different market to the CD32. Essentially Sega and Nintendo are just marketing companies. Commodore need to go for a different market. They really need to push the fact that the machine is a computer not a console. It would be a big mistake to take on Nintendo and Sega."

21st Century - Andrew Hewson:
"The key strength of the machine is the RAM. Consoles (Sega and Nintendo) are so strapped for RAM, you can see it all the time in console games. They're always talking about Full Motion Video and everything but the machines don't have enough RAM for it anyway. That, in the long run, is going to be the biggest strength. If Commodore market it well, then it ought to wipe the floor with the consoles. They should really be quite frightened of it. There's still a bit of development that Commodore can put into it behind the scenes. The blitter doesn't move any faster and they haven't used any fast memory in the right places, so there's still a generation of development they can put into the machine."

David Braben:
"The price seems a bit high, but I guess it's good value for a CD-based machine. I am glad they stuck with the A1200 specs and didn't cut down. The thing is it has to look fashionable, regardless of what's inside it. The ones I've seen looked a bit plasticy and I really hope that people can overlook the style as it's the quality of the software that counts. Hopefully, the CD32 will make people take the rest of the Amiga range seriously again as everyone seems to be saying these days how the Amiga is dead and the PC is the new machine. Amiga sales figures are still very high. I doubt it will be long before people develop primarily on the CD32."

Grandslam - David Birch:
"It stands a great chance of being a success. The price point is great and [Commodore have] positioned it well. I think it will bring CD forward as a console device. It seems like the Sega CD is suffering slightly at the moment and I think the CD32, because of its price point and the list of software houses supporting it, has a greater chance of success. The public will probably think "Wow a CD machine for £299. Maybe it's time to buy one". I don't think it will affect the console market too much, the base is already there. What I think it will do is open up the public to the CD game revolution. It's also a chance for a software developers to get in on the CD market. Marketing is obviously the big thing. Take Sega, the sheer weight of publicity and sponsorship has pulled them through tremendously well. Commodore will have to have that profile in the market place. You can't launch the machine without beating your chest."

System 3 - Tim Best:
"It's potentially the most exciting product we've seen for many years. I believe it's going to give a lot of developers a swift kick up the backside as an easy entry in to what tomorrow's technology holds. The problem the British have is they get used to a particular format and hang on to it like a bulldog. Very often they're blinkered as to what is happening in the rest of the world. It's long been agreed that we have the best programmers and the best artists by a long way, but the Americans are the most innovative and this is purely because they are constantly looking at what's new in technology. We don't. We become content with doing something well on one format and sticking to it like glue. So I hope, because they're launching it primarily in Europe with the support of a lot of software houses, Commodore get the price right and they get it out when they said they'd get it out. Much can be learned for the marketing from Sega and Nintendo."

Maelstrom - Mike Singleton:
"Well we'd love to develop on it but we haven't even seen it yet! Eventually one of the CD formats will latch on as the main player, but whether that will be CD32 or CD-ROM or CD-i remains to be seen. CD as a whole is a completely different ball game. What was once a programmer's industry will soon become an artist's industry."

MicroProse - Martin Moth:
"We will develop where feasible, but certain games of ours are difficult to convert due to game saving considerations. It is about time we had a new piece of hardware to rejuvenate software sales, although this is a brave step for Commodore considering the bad press received by the CDTV. However, there seems to be enough power behind it to make it a hit. It seems to be aimed at people who want to get more out of the machine than just games."

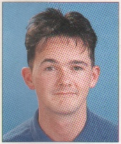
FLAIR SOFTWARE - COLIN COURTNEY:

"As with most new machines, for the first few months we'll probably just see standard port-overs from other platforms. It normally takes a good few months before people start developing for real. We, on the other hand, are bringing in extra people to start using the machine's full capabilities right away."

WILL THE CD32 BE A SUCCESS?

Now that we've had the CD32 in the office for a month, we've all built up our own opinions about the machine. Here's what the CU AMIGA team think...

DAN SLINGSBY



My main gripe is the lack of software support. Okay, there are a lot of titles 'in development', but most are months away from release and others are merely CDTV re-releases or Amiga ports. Where's the truly revolutionary drop-dead software that'll have you dribbling at the mouth?! In short, it doesn't exist. Commodore spend millions developing a revolutionary console and then sit back on their arses and expect someone else to come up with the games that will sell the machine in the first place. I really can't understand their attitude - and I bet Sega and Nintendo are having a quiet chuckle to themselves, too. When the SNES was launched, Nintendo bundled it with Super Mario World, an excellent platformer, and to help boost sales of the Megadrive, Sega poured millions into developing and marketing their Sonic games, a strategy which helped them draw level with Nintendo in the important US market.

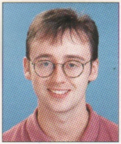
Another minus point is the tacky look and feel of the machine. Even the Atari VCS looked better than this! The volume slider for the headphones looks like it'll break off within the first week of use and the CD compartment is a rather cumbersome top-loader. After being used to front loaders on both my audio CD and CDTV, I was a bit disappointed with this, especially as it's possible to open the casing while the disc is still spinning around. Not a good idea. As for the controller, it looks more appropriate for an Early Learning Centre than a state-of-the-art home entertainment system. The raised pad which has replaced the more traditional Amiga joystick is pretty poor when compared to the circular recessed pads found on the Megadrive and SNES controllers.

On the positive side, backwards compatibility with existing CDTV titles is quite good, probably even higher than the 60% quoted by Commodore's UK boss, David Pleasance. Most of the discs we've got lying around the office seemed to work okay, so there's a reasonably large back catalogue of entertainment software available, even if most aren't much cop. We'll just have to sit back and wait... and wait... for the truly mind-expanding stuff to hit the machine.

It's also nice to be first. Both Nintendo and Sega have prototype 32-bit CD machines in development, but they are some way off from full scale production. Even 3D0 looks like it'll be another year at least before it's released in the UK, and it'll not have such a competitive price point either. The flip-side to all this, though, is that first does not equal best. Look what happened to the Atari ST or even the CDTV to see what I mean by that! Still, with an aggressive marketing campaign, Commodore could probably hope to build up a considerable head of steam and market share before any competitors enter the market - although Commodore's target of 400,000 sales in Europe by January 1994 must be seen as pure fantasy.

Don't get me wrong. I'm not knocking the machine. I genuinely want the CD32 to be a success. Ever since I bought my first Amiga, I've been a big Commodore fan, but things haven't got off to a good start. Then again, the Amiga didn't start making waves until well into 1987, and from there it never looked back. Once the FMV card and keyboard/floppy disk drive accessories are launched, I believe the machine will start to really carve out a niche for itself. Here's hoping...

JON SLOAN



When I first heard about a 32-bit Amiga with a built-in CD drive I could have wet myself (it's a trick I learnt from Dan). Just think, oodles of new games with amazing graphics and sound, as well as compilations of all those old favourites – all on one disc!

Like any expectant, albeit surrogate, father the first sight I had of the baby held a mix of good and bad feelings. On the downside it looks like a refugee from a 70s sci-fi series and could do with being more solid, never mind the gap where a CD or three should be. But, more positively, it does herald a new era in Amiga gaming. It may sound

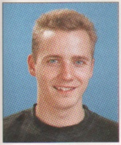
> **Another minus point is the tacky look and feel of the machine. Even the Atari VCS looked better than this! The volume slider for the headphones looks like it'll break off within the first week of use and the CD compartment is a rather cumbersome top-loader.**

like a comment straight from Commodre's hype-machine but it is a genuine belief. There is no doubt that it will suffer a slight hiccup on release due to the lack of jaw-dropping software available but, in the long run, we are going to be inundated with amazing titles. And don't forget, it's years ahead of any comparable piece of hardware.

Don't forget its MPEG capabilites either. The music and film industry will be playing their part in marketing the CD32 a success. The CD32 is currently the ONLY machine available at a cost-effective price that can deliver this kind of multi-format entertainment. Imagine this humble machine acting as the control centre for a whole home entertainment system. Think about games publishers too – with less money lost to playground pirates they'll have more to invest in new titles. No longer will they be able to excuse themselves from the Amiga market claiming they lose too much money in it.

Commodore have faced many troubles over the past year and still come out smiling. Alright, it may be a fixed grin caused by a digestive ailment but it's still a grin. Anyway, the point is they're relying on the machine to be a success, in fact the company's very existence depends on it. This may seem like no great shakes to you but think about it, the future of that Amiga in your bedroom rests on the shoulders of this new machine (more importantly, so does my job!). We all have a duty to make the machine sell. Look to the future.

TONY HORGAN



So will the CD32 be a roaring success, or will it sink without trace? I'd love to see it beat the Sega and Nintendo boys at their own game, but I must admit to being extremely doubtful.

The CD32 is coming from a completely different angle than the Megadrive and SNES. For a start, both of the established consoles came from companies with experience in the home video game market. Sega and Nintendo both know that software sells hardware. When you go into Dixons and see an Amiga displaying a boot-up screen, and a MEGA CD running the full motion video "Girly High School Slumber Party Adventure", which one's going to catch your eye?

Unless the CD32 has strong countermeasures against photo-realistic teenage nymphos, no-one's going to give it a second glance. What we've got so far is *Diggers*, a tedious variant on the *Lemmings* theme. Even if it played well, it would do very little to sell the machine – after all, it doesn't take a 600Mb CD, 2Mbs of RAM and 256 colours to draw a few little men and a sunset backdrop. We're talking Commodore 64 stuff here. The important thing from Commodore's point of view is to get a good base of users from the start. Only then will it be financially viable for third parties to spend money on developing software for the machine.

This is the most important area in which Commodore differ from Nintendo and Sega. Whereas the big console companies made sure that there was a good selection of gob-smacking software available for their machines from the word go, Commodore have done virtually nothing to assure the same software base for the CD32. An intelligent chimpanzee could cotton on to this theory of "software sells hardware". Commodore have been in the business long enough, and have seen enough dismal failures (both from themselves and their rivals) to know better.

If the CD32 does bomb, Commodore have no-one but themselves to blame.

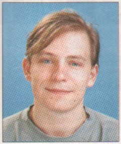
NICK VEITCH

I have no beef with Commodore and their vision of the future. I think just about everybody has realised by now that in the future CD-ROM will be important for games and application programs alike. As much as this fact is inevitable, it may also take some time. Sales are sure to pick up this year, and it would be a travesty if the CD32 didn't sell in far larger numbers than the CDTV, but it could be this time next year before we are looking at a healthy market which will interest not only the software houses but also the high street stores.

The strategy of releasing the machine so early seems a bit suspect. There is an ad in the latest Grattan's catalogue for a CD32, but there is no mention of what software you are supposed to use with it… Pre-empting the 3D0 and the price drop of the CD-i was a smart move, but it would have been smarter to have had at least one outstanding title available at launch. The temptation for software houses to adopt a 'wait and see' policy will be too strong. They are unlikely to put huge resources in to developing a title for an unproven platform. Conversely, this is precisely what the CD32 needs to kick-start it.

The machine itself is astounding good value - a 32-bit '020 based AGA capable machine for less than the price of the A500 two years back, but unless this is utilised by, initially, some great games there is no point. The CD32 has the right price, the right hardware and the right attitude, all it really needs is the right software.

MARK PATTERSON



Excitement about the release of the CD32 is running high, and I'm as caught up in it as anyone else. It was officially unveiled to the world on July 16th, the same day as Spielberg's Jurassic Park opened in Britain, and for me the excitement surrounding both became inextricably intertwined. The hype in both cases was at an all time high (respect to that PR machine!), and naturally I wondered whether or not it was justified. Both seemed to offer something new in their genre and it remained to be seen if either could deliver the goods.

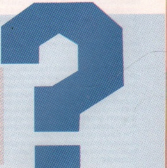
Jurassic Park - the movie lived up to the hype and more besides, so it just remains to be seen how the CD32 will fare. Of course, we all know its specs, and they're impressive enough to beat anything else on the market, but will Commodore handle it properly this time?

I can't help but think about the CDTV. That too was supposed to be the new wonder machine, but after a protracted launch which diminished people's interest in it, and a total dearth of worthy software, the machine is only marginally more lively than the fossils in Mr. Spielberg's masterpiece!

After a 28 million pound advertising campaign, Sega's Mega CD has utterly failed to inspire on the software front. Despite the diatribe, the software to justify such an expense just hasn't appeared, leaving many people feeling jaded towards the entire CD games concept. I sincerely hope that the CD32 will become a runaway success, and I for one will be ready to buy one as soon as they're generally available. The market certainly seems more receptive to the idea, and the specs of the machine are impressive enough to attract the technology junkies.

In the long run, the machine's fate rests in the combined hands of Commodore's marketing people and the game's publishers. Let's hope that they can get it right this time!

> **“Commodore have been in the business long enough, and have seen enough dismal failures to know better.**



BEHIND THE SCENES

Commodore's Head of Engineering, Lew Eggebrecht, gives us a behind the scenes account of how the CD32 console was first conceived and then developed.

A little over a year ago we had just finished testing the new AA 32-bit chipset. We now had a very cost effective 32-bit Amiga compatible chipset that met all of our performance criteria. Our basic plan was to convert the entire Amiga product line to the new 32-bit architecture as soon as possible. The AA chipset had been debugged using a high end system design which eventually became the A4000 family of desktop video workstations.

Those systems were introduced in the early Autumn of 1992. Slightly later, we began the development of the A1200 to upgrade our home computer line to a full 32-bit system. The results of this activity was the introduction of the A1200 slightly after the launch of the A4000. Our next target was CDTV. Although CDTV did as well or even better than competitive systems during its lifetime, it did not live up to our expectations. After analysis of the product and the market we concluded that a new CD-ROM based interactive multimedia player needed to address the following issues to be successful:

1. The $600 (£400) to $800 (£550) price point was too high for this type of consumer product. A new price point in the range of $300 (£200) to $400 (£270) was needed to ensure success.
2. Good multimedia applications needed a higher performance spec and better-quality graphics to be successful.
3. VHS-quality full motion video would have to be at least an option on any new system.
4. To many customers it was difficult to explain what CDTV was. It was many things but had no specific focus. It did not play movies, it was not quite a computer and it was too expensive to be a games console.
5. The most popular titles on CDTV were game or entertainment titles, not reference or educational titles.

The decision was made to focus any new CDTV-like product towards games and entertainment and, secondly, to support a general interactive multimedia player capability. Amiga games software had been phenomenally successful in the UK and Europe, so we decided to play to our strengths in that market. This also would put us head to head with some pretty stiff competition. The decision to focus on games and entertainment created a whole new set of questions and issues which needed to be addressed:

1. Should a new 'game console' be cartridge based, CD-ROM based or both?
2. Should compatibility with CDTV be maintained?
3. Should compatibility with the A1200 be an issue?
4. Since most games bypassed Amiga DOS, should it be used?
5. What interface ports are needed - composite video, S-Video, RF, Stereo, etc?
6. What type of game controllers should be provided, IR or wired?
7. How expandable should the system be?
8. How much memory is standard?
9. Is non-volatile memory required?
10. Should the CD-ROM drive be double speed?
11. Should multi-session support be provided on the CD-ROM drive?
12. Should the power supply be integrated with the main console or be a separate unit?
13. What processor and clock speed should be used?
14. What hardware features could be added to improve performance?
15. What features need to be added to Amiga DOS to support better games?
16. What should the cost and price targets be?
17. Who will be our main competition: Sega CD, Nintendo, 3D0, CD-i?

32bit
AMIGA CD32

The CD32 was put together in record time. The project began in October 1992 and was finished in May 1993.

Of course, as with most new products, the more controversial issues concerned what the console should be called, what the colour should be, and what type of packaging it should come in!

These were just some of the many questions we needed to address before a system specification could be completed and development started. Since the Amiga has enjoyed very good support from the UK and European developers, we decided to solicit their input. In mid-summer of 1992 we set up meetings with several of the key game developers who had strongly supported the Amiga. The basic question asked was, "if you had our 32-bit AA chipset technology in a game console, what would your definition of a 'dream machine games console' be?" As you might have guessed, we had a wide variety of input and opinions. However, a basic trend did emerge from these meetings:

1. A new system must be CD-ROM based. CDs were much easier to produce, less costly and were perceived as a better delivery system than cartridges.
2. A 32-bit CPU with 2 megabytes of memory was needed.
3. The main competition would be Sega CD.
4. The AA chipset and 32-bit CPU would provide 3 to 5 times the performance of the Sega CD.

5. If we could produce a 32-bit AA system for the same price as 16-bit systems of today, we would have a clear winner.
6. Full motion video was needed as an add-on feature.
7. Retaining compatibility with the Amiga would enable quick software development.

Next, we went back to West Chester PA., and began to write a preliminary product specification. This was led by Jeff Porter, our Director of Advanced Technology. After many long meetings with our development staff, we finished the preliminary specification in September 1992. We took this product specification back to the developers to solicit their input. The general reaction was 'You will have a winner if you can produce this product at the competition's 16-bit price point by next autumn'. A few minor adjustments were made in the specifications and it was finalised.

The project was now given the go-ahead and turned over to our development staff: Jeff Frank, Director of Systems Hardware; Don Kaminski, Director of Mechanical Design and Dr. Alan Havemose, Director of Systems Software Development. By mid-October the detailed specification was complete, a development schedule was in place and the project was begun in earnest. In the past, projects had been started without detailed specifications resulting in significant delays. We were determined not to repeat this error.

The major development challenges were to meet the cost targets and stick to the rigorous schedule. A large part of engineering is the design of the parts to meet cost targets. This is often more difficult than the technical problems encountered. Also, evaluating components from outside suppliers and negotiating schedules and costs are a major part of the development effort.

The key technical challenges for the development group were:

1. Development of a new low cost, high performance, double speed, multi-session CD-ROM drive and its electronic and micro code. The drive mechanism was from Sony, with electronics from Sony and Chinon. The drive micro code was developed jointly between Chinon and Commodore. Chinon was to do the final assembly and testing of the new drive before shipping it to our Philippines plant for assembly into the CD32.
2. Development of a new VLSI [Very Large Scale Integration] gate array to support the interface of the new CD-ROM drive, the two 8250 Amiga chips, the CPU interface, the Glue Logic and the chunky pixel to bit plane conversion memory array. This new chip had over 37,000 gates and had to be right the first time. There was no second pass in the schedule!
3. Development of a new enhanced version of Amiga DOS. Support for the CD-ROM file system needed to be added with multi session capability added. Support for the new game controller interface also needed to be included as was support for the CDTV applications. Finally, special functions were added to enable the application to orderly close down portions of the OS to gain memory and cycles for the application.
4. A totally new mechanical design was needed for the Amiga CD32. Tools for over ten new plastic tools had to be designed and fabricated. The top-loading CD-ROM drive created a very critical design problem between the top cover and chucking mechanism and the top of the case. A full 3D CAD simulation of this area was needed to achieve first time success. Again the schedule only permitted one pass on the development cycle for the injection moulded plastic parts tooling.
5. Also, manufacturing test procedures, programs and test fixtures needed to be developed in parallel to meet our schedules. Out target was to be able to support production levels of 25,000 units per week within four weeks of start up!

The man himself – Lew Eggebrecht.

Of course, no matter how good the hardware platform was, it would not be successful without good applications that truly utilised the 32-bit AA hardware and the CD-ROM drive. Our CATS organisation, lead by John Campbell, was given the task to solicit developer support and provide ongoing technical support to the developers. Due to the large body of Amiga game software already available on floppies and the developers' familiarity with the Amiga and its development tools, it was easy to get commitment to do new or enhanced titles for the CD32. To emphasise the importance and commitment to this project, Commodore's UK MD, David Pleasance, our president, Mr. Mehdi Ali, and myself met several times with each of the developers to encourage support. As you can see, the response was outstanding as is evident by the many titles now available and under development for the Amiga CD32. Dr. Alan Havemose and John Campbell put together an early developer support package in mid-December to allow application development. This package included documentation on the system hardware and the new Amiga DOS features, an early version of the new Amiga DOS and a special version of an A4000 system combined with a number of tools. The A4000 development system included:

1. A special processor board with an 88EC020 processor to simulate the performance and processor environment of the final product on the A4000.
2. An early version of the new Amiga DOS with the CD-ROM drive simulated on the hard drive.
3. Support for writing CD gold disks.
4. Support for optimising CD data track layout for each application.

A decision was made to limit the number of early developers to those that would commit actual resources and were long time faithful Amiga developers. With our limited resources it was impractical to attempt to support a large developer group immediately. As time went on we slowly added developers. Chris Ludwig from our CATS group spent many weeks in the UK and Europe supporting the developers first hand. Also John Campbell, Dr. Alan Havemose and myself made several trips to support them.

We set an internal target of being able to demonstrate a working system at the winter CES in Las Vegas (2nd week of January 1993). The development group worked around the clock and through the Christmas holidays to meet this target. We rushed the gate array through FAB and it worked with only one minor problem. We got a prototype CD-ROM drive working and had a hand-made version of the case work fabricated. We met the target with a working system and a simple running demo. A management decision was then made to show the system.

The first version of the new gate array in this first prototype was called Arizona and was done in record time. It was no longer the critical path in the design. After many discussions with our software group we made a decision to further enhance Arizona. Much of the 3D software and Full Motion Video software generated chunky pixel data as their output. In the Amiga this data then had to be converted to bit plane mode for actual display. This process took a lot of CPU cycles. We decided to add special hardware to the Arizona chip to assist in the conversion of chunky pixel data to bit plane format. There were risks since Arizona worked and any changes could result in a bad chip impacting our schedule significantly. The change was made and again we had a first time success. The new chip was named Akiko.

By mid-February 1993 we were able to deliver 15 prototype systems to our selected set of developers. They were mounted on plywood sheets with open wood frames but they allowed developers to run real CD applications on the actual hardware. These early systems had CD-ROM drives that required manual CD placement and chunking – which sometimes ran backwards, old Arizona chips, reworked Nintendo game controllers and early versions of Amiga DOS supporting the enhancements. Slowly we upgraded these systems with new drives, Akiko chips, new game controllers and the later version of the new Amiga DOS EPROMS.

Our target was to begin a pilot production run of 200 units in our Philippines plant in early May. To meet this schedule we had to lock down the system software five to six weeks earlier to accommodate mask ROM lead times. At this point we had very little test time on the new Amiga DOS and CD-ROM micro code. To further complicate things we made the decision to test and support the top 30 CDTV titles on the new system. These now all had to be tested and any problems resolved by early April. To accomplish the desired testing and reduce the system's technical risks we decided to delay the start of pilot production by approximately three weeks. This turned out to be a wise decision since we found a fatal problem in the CD-ROM drive's micro code which we were able to fix in the system software. During this time several other hardware problems were also discovered and corrected.

In the first week of June we started the first production run of 200 pilot machines. These systems were immediately distributed to our developers and our own Quality Assurance department for rigorous accelerated testing. We logged over forty minor problems which were analysed and corrected. No major problems were found!

Test software and fixturing was in place thanks to our test engineering group. Manufacturing and procurement, lead by Steve Liang, our Vice President of Worldwide Manufacturing, was now ready to produce the system in volume. In the second week of July, volume production of the Amiga CD32 began. From the project's start in October 1992 to first production in May 1993, the console was completed in record time. This extraordinary achievement is credit to all of Commodore and especially to the dedicated and talented people of the development group. All contributed above and beyond the call of duty, but special praise is deserved by George Robbins who lead the systems engineering development team. I have worked in this industry for over 25 years and have rarely seen the talent and dedication that was exhibited by this group.

COMING SOON

Last month we took a close look at what floppy-based titles we might expect to see make an appearance on the CD32 console. This month, we're going to concentrate on entirely new games, designed to take advantage of the new console's technical capabilities. Here's the pick of the new releases.

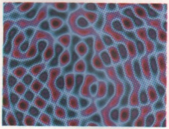
VIDEO CREATOR
ALMATHERA

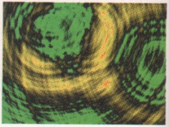
Almathera's *Video Creator* aims to give everyone the power to make their own psychedelic rave videos. Going on what's been shown so far, this could be pretty big. Thanks to the CD32's lack of a keyboard, everything in *Video Creator* is controlled with a point and click interface. The CD is chock full of multi-coloured abstract images, animations, swirls, tunnels, and all kinds of other weird visuals. From an easy-to-use control panel, you can drop in, fade out, mix through and generally mash up all of these images at will.

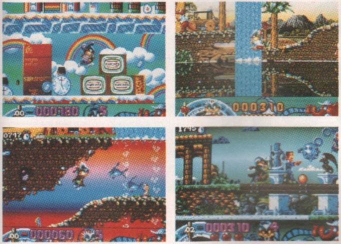
Let's say, for example, you've got a piece of music that begins with some chords and a bleepy loop. You could fade in some slow colour-cycling, with maybe a little wibbly image over the top to go with the bleeps. Next you could overlay a little animation loop as the rhythm picks up. Once the whole beat drops in, you could switch to some full-on strobes and loads of in-yer-face effects. Well, you get the idea...

If you can't be bothered with all that live mixing, how about getting the CD32 to do all the work? *Random Raves* comes with *Video Creator*, and does pretty much the same thing, but responds to different frequencies from audio CDs. All you do is pop in your CD, and the CD32 does the rest! Perfect for the over-stretched party host come DJ come VJ!

If you aren't blown away by these entrancing graphics you probably need to connect your brain to an electricity sub-station and throw the switch.







With a doff of the hat to The Last Action, the star of *Oscar* is sucked into the movies.

OSCAR
MILLENIUM

Don't you just hate people who jump on bandwagons? I've seen more dinosaurs in the past few weeks than most cavemen saw in their entire lives (all right, I know it's not a factual analogy, what with dinosaurs existing millions of years before man and all that, but cut me some slack will you?). Still, at least Flair don't just stick with Jurassic connections. With *Oscar* they've plumbed the depths of sci-fi, westerns, cartoons and just about any other Hollywood genre you can think of.

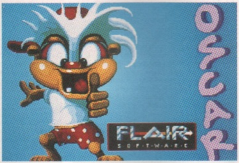
The premise is that Oscar, a lovable teenager (is there such a thing? I thought they were all obnoxious bags of hormones, 'discovering' girls and bunking off school) really enjoys going to the flicks. I mean really enjoys it. In an almost Last Action Heroish act of special effects, Oscar is drawn into the films for real and has to battle his way through everything from Jurassic Park (unofficially) to The Curse Of Frankenstein (unofficially).

This is all presented, naturally enough, in the form of a super-fast, super-colourful, super-absorbent platform romp, with baddies, goodies, monsters, bonuses galore and things exploding into a mass of stars whenever you hit them. Well how else would you get seven types of film genre into one game? A graphic adventure? I think not.

GUYS AND TROLLS

You may recognise the style and nature of *Oscar*. Do you remember *Trolls*? The strangely compelling little platform romp of last year forms the base upon which *Oscar* develops. Seven worlds (Cartoon, Wild West, Dinosaur, Game Shows, War Games, Horror and Sci-Fi), each with three levels, plus a couple of bonus areas, make up around thirty levels of action, with graphics, sound and general effects being completely enhanced since the cuteness of *Trolls* hit our screens.

One feature that's been retained from the original game is the Yo-Yo of Death. A clever little toy, the Yo-Yo allows you not only to smash monsters into cinematic dust, but also to swing from platforms allowing access to previously unreachable areas of a level. Something else you'll recognise is the level select screen (almost a simple level in itself). This time you're in the foyer of the local multi-screen cinema with each doorway leading to a different film (level).



With the success of *Trolls*, Flair are hoping for something pretty big from *Oscar*. Maybe they'll even win something!

One of the key differences between this and *Trolls*, though, is water. Most of the levels have what is called a 'waterline' beneath which the rest of the level becomes aquatic. Suddenly the birds and dinosaurs have become piranha and sharks and Oscar is forced to hold his breath for as long as it takes to collect all that's necessary from beneath the waves. It adds a completely new slant to each level, at once changing the graphical look of things and the control system.

MARKET TRENDS

With the basic game engine lifted from *Trolls*, and since that particular game did pretty well, you may be wondering why not call it *Trolls 2*? The thing is, *Trolls*, you see, tended to come across as... well, a bit feminine. Now no offence to our female readership but it seems that the majority of Amiga gamesplayers are in fact, gasp, boys! So with this in mind, the game was designed with a more masculine feel to it – action films, teenage boy hero etc.

With regards to development of the game, the CD32 version is pretty much the same as the A1200, with obvious improvements in the audio/visual areas (see Plastic Surgery panel). Both of these versions differ greatly from the A500 game though, with added effects, bonuses and extras. Naturally they also run a lot faster and smoother (with the CD32 version playing like a completely different game when run next to a standard machine).

Whether *Oscar* has the ability to compete with the likes of *Robocod, Putty* and *Superfrog* (all of which are also being developed for the new machine) remains to be seen. Early impressions seem to indicate that *Oscar* has all the speed, colour and variety seen in the 'big name' games, if not more so. Plus it has the back of *Trolls* to ride on, a game which went down pretty well with just about everyone. It can only help.

PLASTIC SURGERY

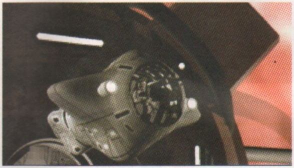
But what fantastic technological advantages does the CD32 version offer over the standard floppy game? Mainly it's a case of enhanced aesthetics since Flair have been working on improving the standard game to take advantage of all the new technical parameters. That said, it's far from being just a standard 'port-over and spruce up' job. For one thing there will be a wealth of sampled speech to delight the ears, things like the central character turning towards the screen and chatting with you if you leave him alone for too long.

Add to that a plethora of additional sampled sound effects, from eerie creaks and moans on the horror levels to the completely redone full-MIDI soundtrack, a feature that really uses the CD capabilities to the full. In fact, Flair likes to think it has gone completely overboard with regards to improving the graphics, sound and gameplay, so much so that they've taken on two completely new programmers just to help develop the CD32 version.

The main problem with developing *Oscar* for the new machine is that work had already started on the A500 and A1200 versions, therefore throwing away the designs and starting again wasn't really an option. It certainly seems that for the first few months of the machine's shelf life, the gamesplayer will probably see little more than enhanced versions of floppy games. This is a problem that Flair are very keen to address.

Their next few projects (a full dinosaur-themed game and *Surf Ninjas*, a title based around the forthcoming Leslie 'Naked Gun' Nielsen film of the same name), as well as appearing in floppy form, will be developed primarily for CD32. This will mean future products will contain more in the way of photo-realistic images and full digitisation, as well as using the Full Motion Video hardware – all of which will be integrated into the gameplay.

COMING SOON



Microcosm features some truly stunning visuals that aren't just restricted to the intro sequence.

MICROCOSM
PSYGNOSIS

Just as The *7th Guest* recently showed everyone why CD-ROM was worth the fuss on the PC, so one game in particular is going to do the same for the CD32. When *Microcosm* was first previewed back on the CDTV it caused such a stir that people began to take a second look at that now ill-fated machine. With the unfortunate fate of the machine, so the game was shelved and everyone moved on to bigger and better things. Of course, when Commodore's bigger and better thing turned out to be the CD32, someone at Psygnosis suddenly had an idea. Now work has restarted and *Microcosm* looks like being even better than before.

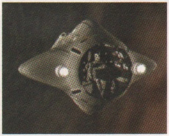
To bring you up to date if you don't know about the plot, *Microcosm* is set half a century into the future and tells of the bitter rivalry between two large megacorporations (everyone always seems to have this dark vision of huge companies running the world instead of governments. Why is that?) and the lengths to which they'll go to get the upper hand. In this case, the leader of one company has been injected with miniaturised warriors in order to be able to find out what he's up to. Your task, in a not too dissimilar way to Fantastic Voyage and Inner Space, is to be placed in the cockpit of a super fighter, miniaturised and injected into the boss's bloodstream. From there it's up to you to seek out and destroy the bad guys.

All this is depicted by graphics that can only be described as stunning. Certainly not for the squeamish, *Microcosm* has photo-realistic scenes of arteries, blood vessels and all the other icky things that you'd find inside the body. In fact it's hard to tell where the intro sequence ends and where the game starts.

BEHIND THE BLOOD

Ray-tracing is the name of the game, with three-dimensional light-sourcing being used to create the amazing graphics. Originally all these visuals were being created on 24-bit machines then downgraded to Amiga/CDTV compatibility. Unfortunately this meant a loss in detail, resulting in most of the screens having a sort of semi-monochrome effect. Effective use of shading counteracted this on the 16-bit machines, but with a 32-bit device to run the game on, the 24-bit graphics should lose none of the quality or colour. In fact in some cases we confidently expect them to be even better than what you see here.

True, *Microcosm* may turn out to be nothing more than a glorified exercise in graphics, but then aren't all the big new games? Where *Microcosm* looks set to score is with the fact that, for most games, you only get the fancy graphics during an animated section such as an intro or end sequence. With *Microcosm* the whole game is virtually one long animation sequence, an animation sequence that you are fully involved in. Can't be bad. Watch out for a full review soon.



Flying through a digitally-rendered blood vessel in Microcosm.

BIOSPHERE
BULLFROG

Populous started it all off. As soon as Bullfrog gave us the ability to see computer games as something other than 'one man in a desperate struggle against overwhelming odds', we gamesplayers have just cried out for more. Bigger and better games dealing with life on a general scale, not an individual one jumping around on platforms. We've controlled whole tribes in *Populous*. We've taken them to war in *Powermonger* and in their last outing, *Syndicate*, we gave them all very large guns and told them to shoot anything that moves. So now the boys from Surrey give us the chance to redeem ourselves by creating new planets from old. The term is terraforming and the game is *Biosphere*. Taking control of a team of specialists, your task is to take a dead planet and set up a fully operational ecosystem. This is achieved by heading down onto the surface of the planet and using whatever scientific means are available to resemble Mother Nature.

Unlike a lot of early CD32 games, Bullfrog aren't content to use the extra storage space of a CD merely for extra animations or other aesthetics. Instead, a large percentage of the disc will be used as an evolutionary database for a host of different creatures. "What you can do, as part of your tools, is to breed things like a Tyrannosaurus Rex with a bullfrog and come up with a... Tyrullfrog! Or you can breed a snake with a giraffe and come up with a giraffe-snake thing. Now as you can imagine the amount of data that is required for that is huge, so that will pretty well fill the CD." The animations that are in the game will mostly concern these strange breeding habits (but nothing gratuitous, it's all in the name of science), although the use of the CD32 will obviously mean that these can use 256 colours and CD sound.

SOURCES AND RESOURCES

A question that is commonly asked of original games like Biosphere is "Just where did you get the idea from?". In this particular case not all the credit can go to Bullfrog as they didn't actually come up with the original idea. An American duo by the names of Richard and Randolph came up with the concept of the game quite a while back. Bullfrog simply added a game to it. "What happened," explains Peter, "was that this was a project they were working on alone, which had been taken on by Electronic Arts. EA dropped it, thinking it wasn't a strong enough game, so we took it on, redesigned it and put more of a game in there."

As with almost all of Bullfrog's titles, *Biosphere* is as much a concept as a game, but early impressions are that it's a concept that is just as intriguing as *Populous* was when it first graced our screens.

Make new planets from old with Biosphere.

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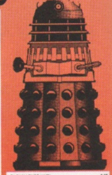

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CHECKLIST

We've only scrapped the tip of the iceberg in our previews section when it comes to the number of CD discs that are in development for the new CD32. Here's the full list as it stands.

Zool is destined to debut on the CD32 in the new year. Gremlin are promising something really special.

AKIRA ● ICE
Cult Manga comic and movie. License snapped up by ICE. CD game rumoured to include video footage spliced between levels.

ALFRED CHICKEN ● MINDSCAPE
Despite losing the Christchurch by-election (although it was a pretty close run thing), Mindscape's new platform star should fair rather better in his CD conversion.

ALIEN BREED 2 ● TEAM 17
Promises to be a much bigger game than the original *Alien Breed*, with loads more aliens to slaughter and huge levels to explore.

AMIGA CD FOOTBALL ● PLATTSOFT
Originally destined for the CDTV, but held back so it could debut on the CD32, this has been put together by some of the people behind Cinemaware's *TV Sports Football*. This will have TV presenters, digitised players, sampled sound, and live commentary. Looking good.

B17 FLYING FORTRESS ● MICROPROSE
Described by one reader as B17 Flying Mattress, this flight sim wasn't well received on the Amiga. Let's hope there's a radical rethink for the CD32 version.

BATTLESTORM ● TITUS
A sub-standard shoot 'em up, released on the Amiga yonks ago. Hopefully, we won't have to endure a straight conversion, but doubtful much can be done to enhance what was a mediocre game to begin with.

BODY BLOWS ● TEAM 17
Team 17 are promising a revamped game of this popular beat 'em up, with lots more characters to choose from.

BIOSPHERE ● ELECTRONIC ARTS
For the lowdown on this new game from Bullfrog, turn to our coming soon feature.

CASE OF THE CAUTIOUS CONDOR ● TIGER MEDIA
Despite numerous phone calls and faxes to their American headquarters, we're still no the wiser about this one. Some people will go to extraordinary lengths to avoid publicising their latest products!

CHAOS ENGINE ● RENEGADE
Isometric 3D shoot 'em up which never stops and features an excellent music score. Under-rated on release, this deserves repeated playing.

CIVILISATION ● MICROPROSE
Sid Meier's groundbreaking god sim will make its CD32 debut next year. Work your way through the different eras until you finally make it to the stars. Superb.

CONNOISSEUR OF FINE ART COLLECTION ● LASCELLES
Enjoy your very own art gallery on your TV! The enhanced CD32 version should be a lot better quality than the CDTV offering.

DEFENSE OF THE CROWN 2 ● SACHS ENTERTAINMENT
See the previews section for more info.

DRACULA ● PSYGNOSIS
Now, this looks like it could be fun. Based on the recent movie, this huge game involves a fight to the finish with the blood sucking human vampire.

DIGGERS ● MILLENNIUM
Reviewed elsewhere this issue. The first CD32 title to make it to the shelves.

DUNE ● VIRGIN
Not the original *Dune* game but Westwood's strategic follow-up. Not to be missed.

FANTASTIC VOYAGE ● CENTAUR
Received a 70% rating when we reviewed it a year ago. Looks likely to be a second-rate rival to Psygnosis' *Microcosm*. But we might be pleasantly surprised.

GLOBAL CHAOS ● HEX
Another former CDTV title makes it onto the CD32. Rave music for beginners.

GRAND PRIX ● MICROPROSE
Geoff Crammond's polished Formula One racer has yet to be confirmed for the CD32, but our spies at the Tetbury-based software house have indicated that it's a strong possibility.

GUINESS BOOK OF RECORDS 2 ● NEW MEDIA
Doesn't need much of an introduction. If you're a records freak, this is your bible. Now you'll be able to see the records being set!

HEROIC AGE OF SPACEFLIGHT ● TROIKA
A former CDTV title which covers the history of NASA's accomplishments in space. Expected to be revamped with video footage, sampled sounds, interviews with astronauts and lots more. As this was already one of the best titles for the CDTV, we can't wait to see the enhancements.

INTERNATIONAL GOLF ● OCEAN
Described as a cross between *Operation Wolf*, *DPaint* and a polygon generator elsewhere in this issue, the CD32 version will have to be significantly improved if it's to prove a contender for your cash.

JURASSIC PARK ● OCEAN
Looks likely to be bundled with the CD32. From what we've seen of its floppy-based cousin, this could be a blinder of a game.

LEGACY ● MICROPROSE
Set in a haunted New England mansion, all manner of ghosts, zombies, ghouls and other violent entities are on your case. Already a hit on the PC, this could look and play like a dream on the CD32.

LEMMINGS ● PSYGNOSIS
Will Liverpool-based and Sony-owned Psygnosis convert the *Lemmings* trilogy onto the CD32? Expectations are high and so is the probability of all three games being included on one disc.

LITIL DIVIL ● GREMLIN
Already destined for Philip's CDi machine, Gremlin are now converting it for the CD32. Guide your little devil round a maze of perplexing tricks and traps. Great animation.

LOTUS TURBO TRILOGY ● GREMLIN
The Amiga's finest collection of racing games are bundled together on one CD. Expect video sequences, plus a few surprises.

MICROCOSM ● PSYGNOSIS
In development for well over a century now, Psygnosis look likely to show everyone else how a CD game should be designed as you take control of a microscopic spaceship and set off on a medical mission inside the human body.

MORTAL KOMBAT ● ACCLAIM
More popular than StreetFighter 2, this arcade beat 'em up features a particularly intriguing move were you can remove an opponent's spinal column. Should be a fair representation of the coin-op.

MUSICOLOR ● VIRGIN
Learn music theory as you compose and play your own music. For ages seven and up.

NICK FALDO GOLF ● GRANDSLAM
One of the finest golf games on the Amiga will be significantly upgraded for its CD32 release. Expect a new training mode featuring Faldo giving some expert hints and tips, plus even better animations and video clips. Caddy will offer constructive advice rather than slagging you off.

NORTH POLAR EXPEDITION ● VIRGIN
Lead a successful expedition to the top of the World – the North Pole. Combines real photographic footage from Sir Ralph Fiennes historic expedition.

OSCAR ● FLAIR
The unofficial sequel to *Trolls*. Previewed this month.

PREHISTORIC ● TITUS
I have absolutely no idea why Titus should opt to convert one of their budget games for the CD32 other than that they must be very stupid indeed. Crap.

PROJECT X ● TEAM 17
Fast paced shoot 'em up which first appeared on the Amiga. Extra levels a possibility.

PUTTY ● SYSTEM 3
A pliable piece of putty has to be guided over platform-packed levels. Original, funny and clever. System 3's finest.

ROBOCOD ● MILLENNIUM
Everyone's favourite aquatic star returns in yet another reincarnation of his finest moment. Platform fun and games.

ROUGH & TUMBLE ● RENEGADE
Cute platform romp with a little kid who's got a liking for B-I-G guns!

SENSIBLE SOCCER ● RENEGADE
Possibly the best Amiga soccer sim, Sensible Software's excellent kickabout will debut on the CD32 early next year.

SIM CITY ● MAXIS
It's not clear whether Maxis will be re-issuing their CDTV version of *Sim City* (bugs'n'all), or developing the upcoming *Sim City 2000* for the CD32. Let's hope it's the latter sim.

SLEEPWALKER ● OCEAN
Can you prevent our sleepwalking pal getting himself into danger? Ocean's charity game comes to the console.

SOCCER KID ● KRISALIS
Awarded a CU AMIGA Superstar this month, the CD version will include an extra country – Brazil – which had to be left out of the floppy release.

STAMPS OF FRANCE AND MOROCCO ● SERIAT
Yes, this title does actually exist, and there's a possibility of expanding the series if it proves popular. Don't hold your breath, though.

SUPERFROG ● TEAM 17
Our caped superfrog jumps for all his worth in this hectic-paced platform game from cult publishers, Team 17.

SYNDICATE ● ELECTRONIC ARTS
The Amiga's most violent game bar none! Rival conglomerates fight it out with flamethrowers, molotov cocktails and machine guns. Drenched in gore.

URIDIUM 2 ● RENEGADE
Andrew Braybrook's back with a sequel to his seven-year-old C64 blaster.

ZOOL ● GREMLIN
The ninja from the Nth dimension is back, back, BACK. Re-live his first adventure in what Gremlin promise will be an even more exciting outing than the enhanced A1200 version.

PORKY PIES

Commodore would like you to think that most of these titles will be out before Christmas – well, don't believe the hype! After ringing 'round many of the companies listed on this page we discovered that nearly all of them are playing a wait-and-see game, and will only release titles once a considerable user base has been built up. In fact, users will be very lucky to see the '18-20' titles promised for the machine's launch on September 1st. It looks like it'll be well into 1994 before most of the titles appear, and then it'll be another long wait before the truly amazing games make their debut. As always, we'll keep you posted.

Another rendered image from the upcoming CD version of *Zool*.

Eagle Software

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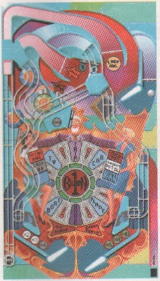
PINBALL FANTASIES
CD EDITION

That ball just keeps rolling, as 21st Century take the sequel to Pinball Dreams and crank it up a notch. Tony Dillon gets on his platform boots.



You might recognise some of these tables, as Digital Illusions have borrowed ideas from a number of their favourite pinball machines.

When Dan reviewed the standard Amiga version of *Pinball Fantasies*, he wasn't too impressed. I, on the other hand, absolutely loved it, and there lies the problem with reviewing a game like this – you either love it or you don't. Pinball has always had a cult feel about it, and if you're not in, you're out. But enough of these cliches – down to brass tacks.

ROLLING ALONG

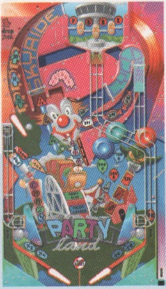
In essence, *Pinball Fantasies* continues where *Pinball Dreams* left off. You have four new tables, each based on their own theme, and each crammed full of flashing lights, spinning bumpers, springs, buttons, bonuses and traps – basically everything you would normally see on a pin table. As always, you have to somehow guide a small polished steel ball through these hellish mazes using only a couple of flippers at the bottom of the screen. To begin with, there's Partyland. Based on the ever popular Funfair idea, the table is laid out with roller coasters and other lunch returning rides, and special ice-cream bonuses. Next up the ladder is Billion Dollar Game Show, with your host with the oversized smile Keith McTeeth. Win cash prizes and a dream holiday in the Caribbean for two. Or you can try your hand at the driving wheel with Speed Devils, complete with an off-road area and pit stops for points. Finally there's the obligatory horror table, Stones And Bones, with more gore than a Freddy film.

The biggest difference between this and *Dreams* is that you get more than two flippers on each table. At strategic points around the tables, extra flippers are placed, just to make those extra bonuses that little harder to catch. Some rat runs can only be reached by these extra flippers, and some of the flippers can only be reached when the ball is whizzing about at high speed, so fast reflexes are most definitely called for!

Each table is quite long – over two screens high in fact, and the screen scrolls to follow the ball. This might seem a little disorientating in theory, especially when the ball has a full head of steam behind it. In practise though, it works very nicely. After all, when playing a real pin table your eyes will follow the ball, so why shouldn't the screen on this? That isn't to say that you don't lose sight of the ball repeatedly, but then again who wants to play a slow pinball machine?

There have been many attempts at pinball simulators, but none before these two have ever really enjoyed any success. Some fail because they just aren't realistic enough, but most fall because they don't feel right. Pinball machines have a definite feel, and it isn't an easy one to reproduce. Judging the angle the ball will come off the bumpers is a skill that takes time to learn, and can be very gratifying once acquired, but most games just completely fail to emulate that, and end up feeling dull and lifeless. *Pinball Fantasies* is a completely different kettle of fish. In short it is pinball to a T.

The ball is perfect in every way. Every single



One of the most noticeable improvements is in the CD-quality music and sound effects. These tables really sound like the real thing.

> **Graphic artist Marcus Nystrom has had his work cut out improving the look of the game, but you have to admit it looks even more like the real thing now.**

knock and bump leaves it reacting exactly how you would expect it to, and the design of each table is such that everything works as it would in real life. Indeed, one of the things that Digital Illusions stresses in their designs is that anything included in one of their tables must be feasibly possible in real life. Even if the electromagnetic mechanisms needed are to intricate to produce right now, it must still work on paper, or the idea isn't included.

SINGING A SONG

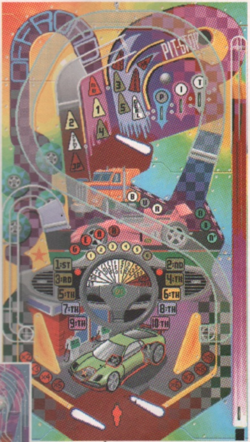
But what you really want to know is how has the game been improved for the CD32? Well, the main initial difference is, of course, the graphics. If you think the game looked good before, then take a look at the glorious 256 colour tables on these pages. Graphic artist Marcus Nystrom has had his work cut out improving the look of the game, but you have to admit it looks even more like the real thing now.

Sound, too, has had a serious boost. Olof Gustafsson has written completely new tunes for the game, and recorded them professionally to take advantage of the CD32 capabilities. As a result you have some stunning music playing while four channel stereo sound effects top the aural experience. I have to say, it improves the game even further, adding to the atmosphere and tension like you would not believe.

All in all, though, *Pinball Fantasies* is much the same as the standard Amiga version. This is no bad thing, of course, if you happen to like the original. Even so, this isn't a true example of what the CD32 is capable of. It would have been nice to have seen more tables, perhaps both *Pinball* games rolled into one package. Still, it's a great game by any measure, and one of the most addictive the CD32 will see for a while.

SECOND CENTURY

The man at the top of the 21st Century ladder has just published his 200th game, and is feeling pretty happy about the whole thing. Andrew Hewson, ex-boss of Hewson Consultants, and one time freelance writer for the sadly defunct Sinclair User magazine, has been in this industry longer than most people remember there being an industry. Memorable moments in this giant's career include the classics *Uridium* and *Paradroid*, and who can forget the unbelievable *Southern Bell*, a faithful simulation of the London to Brighton train ride!



QUOTES AND MUSINGS

We asked project manager Fredrik Liliegren of Digital Illusions what his thoughts were on Commodore's new darling.

"Basically, it's the best available console. It's a fair price, much better than the Mega CD. It's a good thing that it's on CD too, as that means less piracy if the games are big enough. On the other side, though, a CD takes a long time to fill. I think that for the first few months, the only games that appear will be Amiga ports with different music. Because it will take so long to fill a disc, there will be fewer releases, but they will be better games. Commodore should have fitted it with FastRAM though. At the moment it runs twice as fast as a normal Amiga - with FastRAM it could have run five times faster."

The best thing about Pinball Illusions, and indeed its illustrious predecessor, Pinball Dreams, is the silky smooth scrolling. It really is the best we've ever seen in a pinball game on the Amiga and, indeed, on any other type of platform.

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RELEASE DATE:	SEPTEMBER
GENRE:	PINBALL SIM
TEAM:	DIGITAL ILLUSION
CONTROLS:	JOYPAD
NUMBER OF DISCS:	1
NUMBER OF PLAYERS:	4

GRAPHICS	87%
SOUND	90%
LASTABILITY	81%
PLAYABILITY	88%

> *The ultimate pinball simulation. Wow.*

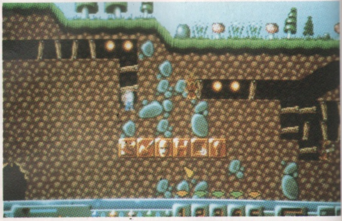
OVERALL 85%

> **It would have been nice to have seen more tables, perhaps both Pinball games rolled into one package. Still, it's a great game by any measure, and one of the most addictive the CD32 will see for a while.**

DIGGERS CD EDITION

Lemmings meets Boulderdash in Millennium's new mining game. John Mather grabs his bucket and spade and digs for victory.

Set on the mineral rich planet of Zarg, *Diggers* is a low level strategy/arcade game where the idea is to strip the planet clean of any valuable deposits while competing against three rival mining operations. This is done by guiding your race of alien diggers around a series of mines using a point'n'click interface and a bank of icons to issue your orders. Standing between you and a bank account with more noughts than Lord Emap's weekly bar bill are three rival mining companies, plus assorted ghouls, zombies, triffid-like plants and the odd dinosaur or two thrown in for good measure. On top of that lot, the hiring of mining equipment has to be paid out of your profits, and the Zarg Stock Exchange is notoriously unstable, so prices for the various gems you mine will go up and down like a yo-yo. Then there's your own workforce to consider – leave them alone for too long and they'll go off on their own and either wander around aimlessly or fall down a bottomless pit.



Armed with shovel and pick-axe, our industrious miners get to work at the pit-face.

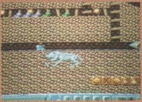
RACE WARS

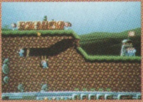
You can chose to control any one of four alien races who have been granted mining licenses by the Zargon authorities. Each have their own particular skills and abilities, so it's wise to take your time choosing a team, as you're stuck with them for the remainder of the game. The Habbish are an ultra-secretive race who possess transportational powers and are an extremely religious lot. They constantly down tools when you least expect it and go off to worship their god, kneeling down and praying. While this is happening, you lose all control over them, so just hope that there are no rival miners around at the time. The Grablins are excellent diggers, up to 25% faster than the other races in the game, but are complete wimps when it comes to fending off attacks from rival gangs. Their stamina is rather good, though, so this lot will quite happily dig for long periods of time without getting bored or needing a rest. Quarriors, on the other hand, tire easily, are slow diggers and lack initiative. On the plus side, they're a warrior race and can easily duff up anyone who gets in their way. The last race, the F'Targs, don't excell in any one area, they're just good at everything. They've also got amazing recuperative powers, so their energy stores deplete at a slower rate than the other races and are replenished more quickly, too.

Once you've chosen your workforce, it's straight into the action. There are a total of 33 areas to mine, although only two of these are accessible at the start of the game. Once you've successfully mined an area (either by exceeding the preset taxes for each level or by wiping out your opponents), you can choose to mine any adjacent area. Each site is made up of a number of screens and packed to bursting point with hidden gems and mineral wealth. By clicking on the various icons, you control where your five miners dig, with what equipment, and when they trade their booty on the Zarg Stock Exchange.

Each area is different and throws up its own obstacles. Some excavations take place in desert

Each miner's movements is controlled by a set of icons. These can be called up by a press of one of the joypad's buttons, but I'd have preferred a permanent display.





SO WHAT'S SO SPECIAL ABOUT THE CD VERSION OF DIGGERS, THEN?!

Well, for starters, it's the first version of the game to be released – an A1200 version will follow later in the year. Then there's the 100-page animated manual I've mentioned elsewhere in this review. There are also five dedicated music tracks and several audio segues digitally mixed and mastered by Richard Joseph, the talent behind the *James Pond* and *The Chaos Engine* soundtracks. Next up are the 'huge' animated intro and end sequences which, quite frankly, are strictly amateur affairs, consisting of sparse animation, little sound, and an even smaller amount of imagination. Still, *Diggers* is the first CD game to be released, so is something of a milestone if not a resounding success...

areas with shifting sands and cave-ins proving a problem, while others are located in grasslands and are made up of inpenetrable rocks, caverns, underground rivers and strange mutant plant life. Then there are mine shafts that have been sunk in arctic regions or over an archipelago of islands with sub-aqua mountain ranges. As if that wasn't enough, each mine is also populated with a bizarre mixture of ghouls and ghosts, and contact with any of these results in certain death.

Strip mining is the easiest and most productive method to choose early on – just set your miners digging in a straight line and leave them to it. Later on, you'll become more adventurous and start to engineer quite elaborate structures, as well as come into contact with rival gangs of miners. This is when things start to get interesting. Depending on your miner's energy level, and a battery of statistics that detail their stamina, strength and agility, you'll either see of your attackers or disappear in a puff of smoke. It's possible to buy back a lost miner at the end of each level, but it'll cost you an arm and a leg to do so.

DIAMOND DEALING

As well as keeping careful tabs on the welfare of your five miners, you need to sell your mineral deposits to earn a profit. The Zargon Stock Exchange lets you deal in only three randomly selected minerals at any one time. By clicking on a particular dealer, you can sell your booty to him at the price he is currently quoting, or come back later and see if the price has risen at all. Flood the market with too much of one ore, though, and the price of that particular commodity will collapse.

Once you've saved up enough cash, you can start buying mining equipment from the Zargon Mining Store. Mechanical diggers, dynamite and teleports are available, along with lifts and bridge building material. All of this equipment goes a long way to making your mining operations run more smoothly, and gives you time to plan a more effective strategy. If funds become too low, it's possible to re-sell your equipment back to the bank at 75% of its value.

Everything in the game is either mouse of joypad controlled. Which one you choose depends on personal preference. The mouse is faster across the screen, but the joypad's buttons allow easier access to the game's many icons and can flip between your five miners much more quickly. Unfortunately, it's the icon-driven control system that lets the game down. To pick up a gem requires no less than eight separate button clicks and soon becomes incredibly tedious. It's the same for almost anything you want to do in the game, from buying mining equipment to simply guiding your men about the screen. Having to constantly re-issue orders to your wayward miners is another drag – I really don't care if they have their own personalities or not, when I issue an order I expect them to carry it out and not suddenly go off for a beer or stop and have a fag.

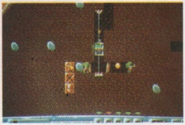
FILLING IN THE DETAIL

The game's graphics are also uninspired. The miniscule miners are sad blobby affairs, with little detail. If DMA could inject some character into their equally small Lemmings, then I'm sure Millennium could have done better than this. Even the mine workings and enemy sprites are drawn in a rather lacklustre fashion – it's something you would have expected to see in a C64 game eight years ago! And then there's the sound effects. The Mining Store uses some nice sampled sounds to convey a busy industrial workshop, with crashing hammers and saws being used, but the rest of the in-game sound effects are poor and tinny.

Sadly, *Diggers* doesn't do anything that takes advantage of the CD32's capabilities. As if to prove this, virtually the same game will be coming out for the A1200 in a matter of months. As there's no existing benchmark with which to judge this game, it's probably best to treat it as an ordinary Amiga floppy release – it certainly doesn't do anything which couldn't have been seen on a bog-standard A500 five years ago! The accompanying press release talks excitedly about the stunning 256 colours used in the game – excuse me, but a few nice copper effects for the sky and some muddy brown and green colours doesn't really have me drooling at the mouth.

I would have liked to have seen the game's strategic elements emphasised a little bit more, especially the trading aspects. A two-player split-screen mode would have been fun, too, as would a wider range of mining equipment. If you know there are rival gangs working in the area, surely you're going to want to supply your men with the latest in anti-personnel mines and weaponry?! As it stands, everything seems a bit dull and boring, with long periods of time spent switching between miners just to check if anyone's decided to throw themselves off a ledge or have a tea break.

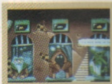
Diggers could have been a real gem of a game, but instead it's more like an uncut diamond. This wouldn't hack it on the A500, let alone the new CD32.



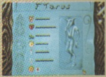
Lifts can help you dig that little bit deeper.

MANUAL CONTROL

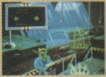
Unlike floppy-based games, the CD version of *Diggers* comes with its manual included on the disc – all 100 pages of it! Presented as the Book of Zarg, and purportedly made of TNT (Texturised Neural Transistors), it's written in a sub-Douglas Adams style with a smattering of Hitch Hiker's-like terminology and jokes. For instance, the book's very existence can only be explained and understood by the three-brained Sloargs that inhabit the Great Hall of a Thousand Rustling Intellects on the planet Cerebralis. When explaining the different flora and fauna that inhabit Zarg, the following entry is recorded for a certain species of fish: 'Tales of the Pihosourus must be taken with a pinch of salt (and maybe some freshly squeezed lemon)'. Makes you wonder what they put in the tea down at Millennium, deosn't it?! To further liven things up, many of the manual's pages are accompanied by small animations and graphics depicting events in the game.



The Zargon Stock Exchange is a ruthless place for commodity dealing. Don't expect to get rich quick with these guys pulling the financial strings.



At the start of the game, a mini-breakdown of each race's weaknesses and strengths is detailed to help you decide which set of miners to choose.



The Zargon Mining Store contains a treasure trove of useful items to aid you in your mining operations. Unfortunately, heavy armaments are in short supply.

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RELEASE DATE:	SEPTEMBER
GENRE:	MINING SIM
TEAM:	IN HOUSE
CONTROLS:	JOYPAD, MOUSE
NUMBER OF DISCS:	1
NUMBER OF PLAYERS:	1

GRAPHICS	65%
SOUND	69%
LASTABILITY	64%
PLAYABILITY	65%

> *Poor quality Lemmings clone lacking excitement.*

OVERALL 67%

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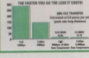

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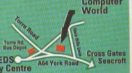

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THE FUTURE'S SO BRIGHT

You've heard what the industry thinks, you've read the opinions of the CU AMIGA staff, now it's the turn of a developer to have his say. Jolyon Ralph offers his own personal view on the CD32.

Do Commodore have a winner in the aggressive console market?

Commodore certainly think they do, and they have managed to convince almost all the key software developers in the UK that it's worth developing for, something they were never able to do with CDTV.

With a true 32-bit machine and a fast CD-ROM at under £300 (the Megadrive/Mega CD bundle costs £399, and that is only a 16-bit machine with terrible graphics quality) all Commodore have to do is get their marketing right, something they have had terrible problems with in the past, and they are on to a certain winner.

The big question is will The Kids switch to Amiga CD32 from the Sega and Nintendo? I asked Dorian, my 10 year old brother and confirmed Super-Nintendo freak what he though of it: "Mega CD is a rip off, this is much cheaper and better. I like the controller and the CD32 looks decent." So there you have it. If games like *Jurassic Park* and *Mortal Kombat* make it out on CD32 soon then it's going to be a monster hit this Christmas.

Should you buy it? If you're into Amiga games then yes. Within a year floppy disk could be dead as a game distribution format. Publishers are eager to utilise the huge potential that CD gives them, and at the same time put an end to piracy that has caused so much damage to the industry.

And at £299, it's exactly the same price as the A1200, so which is the better buy? Well, if you want CD games, then the CD32 is currentl y the only choice. The CD drive for the A1200 is still not available, and I doubt it will be released this side of Christmas. It is highly likely that the 'computer' expansion box for the CD32 will be available long before the A1200 CD-ROM drive (which itself is unlikely to cost much less than the CD32).

As more publishers take the plunge and, like Millennium with *Diggers*, release on CD first and a cut-down floppy disk version later, it makes little sense to rely on floppy disk software.

The potential of the CD32 is massive. The hardware is excellent, there are a lot of programmers who know how to develop for the Amiga, and the development costs are relatively small. It will take a few good quality titles to make CD32 a success, and these are definately on the way.

I am currently finishing my first title on CD32, called *Video Creator* (described elsewhere in this issue) and I'm confident that CD32 is going to sell well enough that I'll be able to develop more titles in the future.

If it had a floppy drive connector and PhotoCD support, then it would be excellent, although I suspect it wouldn't have been able to have these and still come out at under £300.

Would I buy one? My own CD32 is already on order, and I can't wait for it.
And is it going to be a success for Commodore? Well, put it this way, I've bought shares in them!

32bit
AMIGA CD32
Commodore

Yes, here's another incredibly interesting shot of the CD32, but only because Jolyon in incredibly shy...

> **Publishers are eager to utilise the huge potential that CD gives them, and at the same time put an end to piracy that has caused so much damage to the industry.**

And is it going to be a success for Commodore? Well, put it this way, I've bought shares in them!

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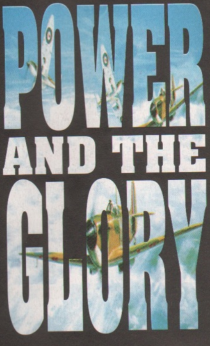

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AMIGA Workshop

ISSUE 9

SEPTEMBER 1993

Amiga Workshop is here to help you get the most from your Amiga. It's packed to the spine with tutorials, step-by-step guides, questions and, more importantly, answers. For the absolute best in Amiga info, look no further than these very pages.

CLUB CALL
BOOK SHELF
VIDEO VAULT

165 BOOKSHELF
Mat Broomfield gets his reading head on for September's book selection. This month – Teach Yourself Computer Graphics, and Breaking Through Technical Jargon.

167 COMMS
John Armitage returns with another dose of Comms info. Many of us don't realise the value of a good Bulletin Board, luckily John's here to put us right.

168 EVERYTHING YOU EVER WANTED TO KNOW ABOUT... AMIGA MUSIC
In the first of a regular series of beginner's guides, Tony Horgan uncorks his overflowing knowledge of Amiga music (or something).

172 VIDEO TITLING (PART THREE)
Continuing his video titling series, CU AMIGA's answer to Steven Spielberg, Jim Strutton, centres on animation.

175 DPAINT GUIDE (PART EIGHT)
If you've been following the series, you should have mastered the basics of *Deluxe Paint* by now. Delving deeper into the workings of this superb package, Peter Lee lifts the lid on another treasure trove of advanced tricks and techniques.

178 AMOS (PART SIX)
Moving on from the finally-completed *Pacman* project, Dave Smithson embarks on a new venture – a shoot 'em up! Find out everything you need to know about aliens, lasers and spaceships.

180 QUESTIONS AND ANSWERS
Captain Q&A (A.K.A. Mat Broomfield) comes to the rescue of another batch of perplexed readers wrestling with the Amiga's more technical aspects. Printer problems, memory muddles, disk drive dilemas and monitor mix-ups – nothing is too much for the Captain. PLUS – Tony Dillon, the boy blunder, gets to grips with a mailbag's worth of AMOS conundrums.

186 HYPERBOOK
So you've got your free *Hyperbook* disks from the June issue of CU AMIGA, and worked your way through last month's introduction. This month Jason Holborn moves onto some more powerful features of this versatile program.

188 DIY
CU AMIGA'S very own mad scientist, John Kennedy, has been let loose in the lab again. This time he's gone and built an Amiga-controlled robot, and so can you! Go get your soldering iron, then turn to page 156 to find out how it's done.

190 BACKCHAT
Drawing the short straw this month, Tony Dillon tries his best to keep his cool in the face of a sackload of irate readers' letters. You horrible lot!

194 POINTS OF VIEW
Never one to keep his opinions to himself, Mat Broomfield lets off some steam about sloppy games programmers. Ooh it makes me mad!

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HARDWARE PROGRAMMING MANUAL

Disk 1 ts a PD (1.25). Disks2,3, and 4 cost £5.00 or all 3 for £12.50. For Assembly language programmers. This manual comes on four disks and is designed to take the novice assembly programmer through programming, the Amiga hardware directly for games and demo purposes. subjects covered include Getting started, interrupts, Copper, Display, Sprites, Blitter,Audio Hardware, Tr acker Replayer. Each subject has an easy to follow tutorial backed up by numerous examples all accesable from the custom designed interface along with an assembler for you to try for yourself. Disk 1 is PD and comes with the display enviroment,assembler, Include files (custom ones), beginners guide-for the absolute beginner and over 40 examples.coded by Mark Meany the author of the ACC disks.

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BOOK SHELF

Feeling hungry for enlightenment? Mat Broomfield takes a look at a few more morsels for your eyes to feed upon.

TEACH YOURSELF COMPUTER GRAPHICS

John Lansdown

TEACH YOURSELF
Computer Graphics
John Lansdown

To most home computer users, the quality of their machine's graphics – its resolution and the number of colours it can use – is one of the more important factors that influenced them when they bought it. Along with processor power and audio abilities, it's one of the key features that define how powerful a home computer is.

Sooner or later, most Amiga owners get out their copy of *D-Paint* and spend some time drawing their own graphics. A far smaller number may also learn how to program the computer, and they will come to have a vastly different understanding of the way graphics work. This book is aimed towards the latter type of user.

It's not aimed specifically at Amiga users, yet everything within it is equally relevant to us. It begins by defining exactly what computer graphics are and some of their uses ranging from film special effects and Computer Aided Design applications, to games and purely aesthetic purposes.

After input devices ranging from the keyboard or mouse to lightpens, pucks and graphics tablets, John explains output devices and this is where things start to get interesting because the author goes into detail about the way that monitors work, and the relationships between resolution and interlaced and non-interlaced display modes. For the potential games programmer, it's important to appreciate the relationship between animation and raster scan time, and this subject is succinctly explained – in fact a great deal of information is given about the inner workings of computer monitors and televisions in general. The chapter also describes laser printers, plotters, LED displays and a variety of other devices.

From the following chapter onwards, the tutorial proper begins, starting with the way that coordinate systems can be used to model objects, first in two dimensions and then later in three.

The tutorials are accompanied by programming examples in pseudo code. Rather than being written in a specific language, pseudo code is a kind of generic language where the reader can easily see what each instruction is designed to do, and adapt it to his own requirements. At the end of each section, there are a series of self-tests where you can evaluate your knowledge by attempting to answer questions.

The book continues to explore ways of moving and animating graphics, and how to present them within the visible screen area (the viewport). It even gives some hints on using anti-aliasing to smooth out jagged lines.

Towards the end of the book, vector and matrix algebra is briefly discussed, and these can be used to create some very impressive animation routines.

Overall, surprisingly readable, and suitable for anyone who can already program moderately in any language.

ISBN 0-340-40819-7, 232 pages, £8.99, Sherrat & Hughes, Waterstone, or any other leading book store.

BREAKING THROUGH TECHNICAL JARGON
– A DICTIONARY OF COMPUTER AND AUTOMATION ACRONYMS

Mark S. Merkow

As our daily life becomes more and more filled with technical devices, our vocabulary also changes to include the new technology. In the olden days flim flam men seemed to delight in giving things long scientific sounding names so that they sounded impressive and their humble origins were disguised. Therefore a shoe became an 'organic perambulatory protective sheath' and piece of paper would be called a 'compressed fibre impression retaining accessory'!

Nowadays the powers that be seem to have gone to the opposite extreme, abbreviating and acronymifying (!) everything. What with RAMs and flops, bits and bobs, Tiffs and Targa, you could easily be forgiven for thinking that our new language has still been devised to hide the true meaning of just about everything.

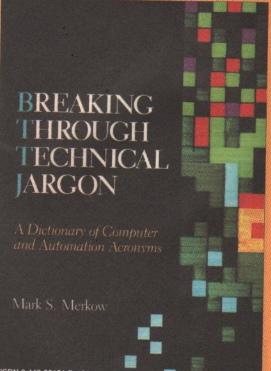
But fret no more, now you can own the very latest in acronymical interpretational non-electronic databases. Yes, for the reasonable price of only £12.95, you can purchase your very own BTTJ!

Put another way, Breaking Through Technical Jargon is a book that explains the meaning of every technical acronym and abbreviation you're likely to encounter.

The book is divided into several sections, the largest of which is arranged exactly like a dictionary, except that instead of words that are arranged in alphabetical order, it's abbreviations and acronyms, and these are then given a brief explanation. Also at the back of the book, the explanations are abbreviated (!!!). Actually it's not as stupid as it sounds. The acronyms, etc. are listed and then just the literal word for word definition is given, rather than an explanation of what it actually means. Unfortunately this section is subdivided according to the size of the computer system being referred to (main frame, personal, mini, etc.). This means that you need to know the system to which an acronym pertains, which is a bloody silly way of doing things if you ask me!

The book also starts with an explanation of some commonly used terms and prefixes, such as interface, megasoftware, etc.

Quite a useful book if you find yourself baffled by the tech jargon that surrounds us.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It's back! The return of the column that connects you to the real world. Join John Armitage as he makes all the right connections.

FREE SOFTWARE!

Apparently you aren't interested in the subject of this article. In fact, statistically, you aren't even reading this sentence. Why? Because all the answers to our readership surveys show us that Comms is a subject of 'minority interest', and basically no one could give a monkeys about it.

I find this very strange, because if you are reading this magazine you have at least a passing interest in the Amiga beyond games. You may be interested in graphics, programming, sound and music... the kind of stuff that makes the Amiga different from a Sega or a Nintendo.

So what do you do when you want to get hold of the latest news on your specialist subject? Well, there's CU Amiga of course – but unfortunately, we can only produce one magazine a month. Apparently there are other Amiga magazines available, too, but the less said about them the better.

What you need is an up-to-the-second source of news, a wealth of free software and a forum where you can meet other like-minded Amiga users. In short, you need to get into comms.

COMMS

Comms has a strange aura about it – something dark, mysterious and probably featuring a lot of anoraks. Perhaps there was a time when this was true, but now anyone who knows how to use a telephone can get on-line. In fact, getting on-line is even easier than using a telephone, because you don't even have to dial a number by hand.

There are two things you need before you can join the hidden world of Amiga comms – software and hardware. The software you need is all in the Public Domain or is Shareware, so next time you order some disks from a PD library, ask for a copy of *NComm* or *JRComm* as well.

Besides the Amiga, the hardware you need is a modem – the device which interfaces your Amiga to the telephone network. Practically all modems connect to a computer via the serial port, and as the Amiga uses the RS232 standard you can be sure that any modem will work, be it for the Amiga or a PC. But before you open your wallet, perhaps the best way to get started is to borrow a modem from a friend. Once you get hooked you can buy your own, and you'll be pleased to know that the simplest units cost little more than external floppy disk drives.

NUMBER, PLEASE

Want to try out some more Bulletin Boards? Here's a list of other boards for you to try.

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Europe ZoneGate	0296-395935
Lightfingers Place	0202-485-723
London Net	081-316-7402
London North Hub	081-445-6514
Lynx BBS	081-599-0869
Magnum Bbs	0274-547-006
MicroMola	081-316-7402
Midnight Resistance Bbs	0482-749-43
Northern Net	091-284-6019
Quantum	021-707-0681
QueST BBS	0422-381164
Sounds Digital	091-284-6019
The Darkside	081-591-8826
The Tavern BBS	081-445-6514
Track 83	0953-851-351
TurboNet Central	0296-395935
Western UK Net	0222-341713
Yukon Ho!	0232-768163

DIAL IN

So with the hardware connected and the software in the drive, what next? Nothing could be simpler – run the software, and you'll be greeted with a standard terminal-like display. Try typing ATZ and return – if your modem is operating correctly it will reply 'OK'. If it doesn't work, try altering the Baud rate settings from the Comms software's pull-down menus.

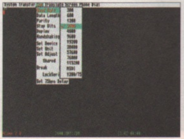


Figure 1: Altering the comms software to use a suitable Baud rate is only a matter of using a pull-down menu. Here the rather pedestrian value of 2400 has been selected.

Now you're ready to try a Bulletin Board. For this example, I'm dialling a board called 'Lightfingers Place'. I've never used this board before, I simply picked up the telephone number somewhere and decided to give it a try.

First instruct the software to dial 0202 485723, then after a few seconds and some strange whining tones you'll be greeted with a display like Figure 2.

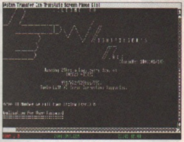


Figure 2: After logging on to Lightfingers Place, your terminal software will hopefully produce a display such as this.

Lots of text and instructions will appear on the screen. Don't panic, think logically and you'll be able to answer all the questions (about the most taxing is 'What is your date of birth?'). The information you enter is for the Systems Operator's eyes only, and by providing it you are registering as a potential user of the board. Don't worry – you won't receive junk mail or bills, it's nothing more than a precaution.

You'll also be asked to pick a password – pick an obscure one, but don't forget it. This Bulletin Board will also provide you with a special log-in number. Make a note of it, and use it next time you log in to speed up the process.

IN THE SYSTEM

Now that you are inside the system, you should see your options displayed on a menu screen, like the one in Figure 3.

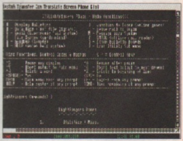


Figure 3: Each feature of the Bulletin Board is reached with a single keypress from menu screens like this one.

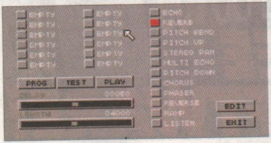
As you are a first time user, you will not have been registered and several important options will not be available to you. However, by the same time the next day you'll have been given your security clearance and will be granted access to the deeper areas of the board. OK, so now you can access a bulletin board. Next month we'll look at what kinds of info and software you'll be able to grab whilst you're in there.

NEXT MONTH

Access granted: deeper and deeper into the Bulletin Board system with John Armitage. Free software is only one of the many things he finds there.

EVERYTHING YOU EVER WANTED TO KNOW ABOUT... AMIGA MUSIC

So you want to get funky with your Amiga? Tony Horgan, noise-maker extrordinaire, gives you the complete guide to starting out in computer music.


EMPTY
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EMPTY
EMPTY
EMPTY
ECHO
REVERB
PITCH BEND
PITCH UP
STEREO PAN
MULTI ECHO
PITCH DOWN
CHORUS
PHASER
REVERSE
RAMP
LISTEN
PROG
TEST
PLAY
EDIT
EXIT

Your Amiga is so versatile, it can even act as a real time multi-effects unit! Microdeal's *AMAS II* has the cleanest effects available, with its superb reverbs and phasers.

The best thing about making noises with the Amiga is that absolutely anyone can do it, and once you've got your Amiga, it needn't cost you more than a fiver to get started. Whether you're a budding Beethoven, or you just fancy a tinker, it's all there waiting to be sampled.

SOUND AS A POUND

Before we dive into the tricky bits, here's a brief introduction to the Amiga's sound hardware.

1. All Amigas have four mono voices or channels. This means that you can play a maximum of four samples simultaneously, but you're not limited to holding just four samples in memory.
2. Two of the channels are output through the left phono socket, and the other two through the right. Proper stereo samples can be recorded and replayed, but they occupy two tracks.
3. Standard Amiga samples have an 8-bit resolution. Most professional samplers use 16-bits, but when used well, 8-bit samples can sound just as good – good enough for professional use in fact.
4. Samples eat memory very quickly. In a 1Mb machine running *OctaMED*, you would be left with room for about 30 seconds of samples recorded at around 16Khz. Remember that's only the length of the samples – your tracks could be much longer than that.
5. To use a MIDI instrument, you need a MIDI interface. These are little boxes that plug into the serial port of the Amiga, and cost around £20-30. Check out the August '93 CU AMIGA to find out how to make one for a few quid.

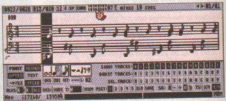
CHIP VS FAST RAM

The Amiga's built-in sample replay routines can only access Chip RAM. If you had a machine with 3Mb of Fast RAM, and 1Mb of Chip, you could only use the 1Mb of Chip to store your samples. It's handy to have some Fast RAM too, as it speeds up the running of your sampler and sequencer programs.

WHAT YOU'LL NEED

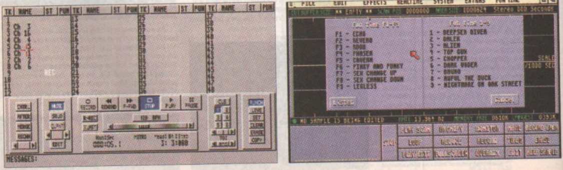
Got the basics then? Okay, here's the shopping list. Don't worry, it's not all essential.

• AN AMIGA You can use any Amiga from a 1.3 A500 upwards. The ideal machine would be a 4000, or more realistically a 1200. The 1200 has 2Mb of lovely Chip RAM (see the panel on Chip vs Fast RAM for more info), and it's faster than the older machines. If you're using a 500, you'll need at least 1Mb of RAM (this will be half Fast and half Chip). A 600 has a standard 1Mb of Chip RAM, so there's no need for immediate expansion there. Any other model in between that lot will do fine.

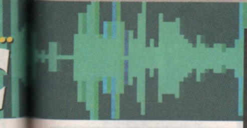

SHOW TRACKS
SOLO TRACKS
SEL.TRACK

Don't be put off by all of this techno-babble - there are still plenty of sequencers catering for the more traditional musos.

• A SAMPLER Unless you're going to rely on samples from the public domain, or go for a MIDI-only setup, you'll have to get yourself a sampler. You


TK
NAME
ST
PUN
Ch 3
Ch 16
Ch 4
Ch 5
Ch 1
Ch 2
Ch 6
REC
RECORD
REWIND
F-FWD
STOP
PLAY
PAUSE
MUTE
SOLO
EDIT
120 BPM
PUNCH
LIVE
SET
CLEAR
ERASE
COPY
MESSAGES:
FILE
EDIT
EFFECTS
REALTIME
SYSTEM
EXTRAS
FUN TIME
** EMPTY **
Stereo
Seconds
F1 - ECHO
F2 - REVERB
F3 - ROOM
F4 - PHASER
F5 - CAVERN
F6 - PINKY AND PUNKY
F7 - SEX CHANGE UP
F8 - SEX CHANGE DOWN
F9 - LEGLESS
1 - DEEPSEA DIVER
2 - DALEK
3 - ALIEN
4 - TOP GUN
5 - CHOPPER
6 - DARK VADER
7 - BRUNO
8 - AWFUL THE DUCK
9 - NIGHTMARE ON OAK STREET
Cancel
SCALE
NO SAMPLE IS BEING EDITED
LOOP
OVERMIX
EXIT

There are samplers and sequencers to suit every size of wallet, and every level of musical ability.



WHAT IS MIDI?

MIDI stands for Musical Instrument Digital Interface. It's a system that was originally designed to control synths and drum machines, but it's also capable of operating effects units, automated mixing desks and other bits of techno-gadgetry.

MIDI sequencers don't record sound. Instead, they record note data – in other words, the order in which the notes are played from your master keyboard. Computer-based sequencers allow you to alter the music on-screen, pulling things into time and deleting unwanted notes. The sequencer can then replay the corrected version of your performance through your synth.

can expect to pay around £30 for one of the cheaper cartridges. Some say the more expensive units are worth the extra cash, but I'm not entirely convinced. I'd say the difference in sound quality is nominal. With practice, excellent results are possible from samplers at both ends of the price range. As they say, it's not what you've got, it's what you do with it.

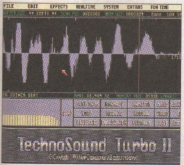
When you buy your sampler cartridge, you'll also get some software. This will let you record sounds into RAM, then save them out to disk for use in other programs. Some of the software that comes with the cheaper samplers can be a nightmare to use. Not to worry though, because you can always match your hardware with a different piece of editing software, and there are a few to choose from in the public domain.

Check out the Samplers panel for more specific info on what's available.

• *A SEQUENCER* The sequencer is the software you use to record your music. Some deal only in Amiga samples, others are totally MIDI orientated, and a few handle both samples and MIDI. When it comes to deciding which to buy, it's matter of horses for courses.

Prices range from around £2 for PD trackers, to £300 for the big MIDI sequencers. If you want to make the most of the Amiga's sampling abilities, steer clear of the MIDI-orientated sequencers and go for *OctaMED* or a tracker instead. On the other hand, if you want to record in real time from a key-

Some sample editors come with handy built-in trackers, but you'll still need a proper tracker for any serious tunes.



SAMPLERS

Which sampler should you go for? Take your pick from this lot.

FILE
EDIT
EFFECTS
REALTIME
SYSTEM
EXTRAS
FUN TIME

TECHNOSOUND TURBO 2

New Dimensions (0291 690933) £29.95

One of the most widely used samplers, TechnoSound Turbo has just been upgraded to version 2. The hardware is up to scratch, but the software is a pain to use. Even so, it does have some excellent features, including hard disk recording, a built-in tracker, MIDI sound module emulation and bags of effects.

AMAS II

Microdeal (0726 68020) £99.95

It's more than twice the price of the entry level samplers, but with AMAS II you get a built-in MIDI interface for your money. It's a stereo system with good hardware. Once again, the software is powerful (it's got the best phaser and reverb effects of any Amiga sampler), but fine editing is almost impossible due to the poor wave display – you'll need to use it in conjunction with another editor if you want to be sure of tight timing in your loops.

AUDIO ENGINEER PLUS 2

Diamond (071 580 4355) £219.99

This is the best around – whether it's worth the asking price is up to you. The hardware connects to the Amiga via a cable, so it doesn't hang awkwardly out of the back. As for sound quality, it has a slight advantage over the rest, grabbing a touch more bass and top end. The software lets you record and playback in stereo or mono, into both Fast and Chip RAM. It's the only package to include a time-stretch feature, and is by far the most user-friendly editor available. The software is available separately under the name of *Audiomaster IV*, priced at £43.

MEGAMIX MASTER

Rombo (0506 414631) £39.95

Another cheap sampler, Megamix Master also offers pretty good value. Like TechnoSound Turbo II, it uses a customised system of icons and menus, which tends to confuse things a little. When it comes to features, it scores quite well, with lots of effects and a tracker section. The sound quality pretty good, too.

STEREO MASTER

Microdeal (0726 68020) £39.95

Very similar to AMAS II, Stereo Master is without the combined MIDI interface. Apart from that, there's not much difference between the two, except that Stereo Master is less than half the price, making it quite a steal.

CLARITY 16

Microdeal (0726 68020) £150

Don't be fooled by the promise of 16-bit sampling. Sure enough, it does sample in 16-bits, at rates of up to 44.1Khz, but you can't use it with any trackers or sequencers running on the same machine. Samples can be triggered from another MIDI device, but then play back quality is vastly reduced when you play more than one sample. In fact, it's very hard to think of any situation in which it would be of any use, apart from as an editor for an external MIDI sampler, in which case it would be quite handy.

DSS 8+

Silica (081 309 1111) £60

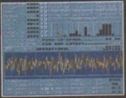
One of the more user-friendly samplers, DSS 8+ is a minor upgrade on the original DSS 8. The software doesn't have much in the way of effects, but for basic sample grabbing, it's a nice program to use. One unique feature it has is the software high frequency filter. When switched on, it filters the incoming sound before it's sampled. It's very effective at sampling basses without the noise that normally creeps in on very simple 8-bit waves. On the other hand, if you switch the filter out, noise appears from nowhere. Used in conjunction with another sample editor, it should satisfy your needs.

»

SEQUENCERS

Here's a rundown of the main contenders in the sequencing field.

PROTRACKER 3.2

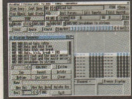


17 Bit Software (0924 366982) £2.00 (including P+P)

Of all the tracker permutations available, *Protracker* is probably the most widely used. All trackers work in much the same way, but some have more features than others. Instead of music notation, the notes are displayed as letters and numbers. So long as you can get your head around that, you'll have a powerful little sequencer at your fingertips. Try to get someone to show you how it works, as they never include general operating instructions.

The downside is that it's very difficult to use. The interface is full of niggling little irritations that can really wind you up. That shouldn't put you off trying it out though, as it's virtually free, and can pump out some meaty sounds from even the smallest machines

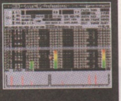
OCTAMED V5



Seasoft Computing (0903 850378) £30.00

Even more popular than *Protracker* is *OctaMED*. The 'Octa' bit comes from its ability to play eight samples at once, rather than the standard four. However, there are a few major disadvantages of using the eight channel mode, such as reduced sound quality, coarse tempo adjustment, and a general loss of features.

On the other hand, in four channel mode it's a little gem. It's based on the tracker system, but has a lot more to offer. There's a built-in sampler, precise tempo control, loads of effect commands, and MIDI sequencing too. *OctaMED* treats samples and MIDI sounds in much the same way, so if you start out with just the Amiga, it's no hassle to add a synth or drum machine at a later date.



OctaMED V5 needs a Kickstart 2 or higher, but 1.3 users can use any *OctaMED* release up to version 4. If you want a taster, *OctaMED V1* and the four channel *MED 3.2* are both public domain. For combined MIDI and sample sequencing, *OctaMED* can't be beat. Check the review in the July '93 CU AMIGA for more details.

RAVE

The Software Business (0480 496497) £49.95

Although it's one of the cheapest MIDI sequencers around, *Rave* also happens to be one of the worst. It's been ported from the original Atari ST program, and inherits all the slow, awkward and fiddly aspects of the user interface.

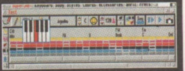
If you don't mind ditching Amiga samples in favour of MIDI instruments, have the patience of a saint, and don't want to do anything too adventurous, *Rave* may be worth a look.

SUPERJAM 1.1

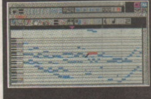
Meridian Distribution (081 543 3500) £99.95

There's a difference of opinion where *Superjam* is concerned. Some, like me for example, say it's a useless toy that sounds like a £30 home keyboard. Others see it as a handy compositional tool that can help get the creative juices flowing.

It's an automatic backing track generator, along the lines of the Atari ST's *Band-in-a-Box*. Composing anything original with it is almost impossible, as it's not really a proper sequencer.



BARS & PIPES PRO 2



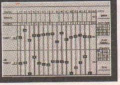
Meridian Distribution (081 543 3500) £299

This is aimed at the musician with everything – you could quite feasibly control a whole studio from this one sequencer. Previous versions of *Bars and Pipes* are still available, and would be better suited to someone who's just starting out. Like most of the MIDI sequencers, there's very little sample support, but it handles MIDI with ease. If you want a user-friendly sequencer, this is probably your best option. Laying down tracks, quantising and then overdubbing is a simple process, and step editing on the graphic display is no problem.

KCS 3.5

Zone Distribution (081 766 6564) £279

This is the other big Amiga sequencer, as you can probably tell from the price. Like *Bars and Pipes*, it's intended for use with racks of MIDI equipment, so if you've just got a small set-up, you won't need half of the functions. Again, you may be able to pick up older, cheaper versions of *KCS* if you shop around.



You don't need to be able to play any instruments to use a sequencer. If you can hum it, the computer can play it!

» board, complete with all your virtuoso flourishes and expression, you'll have to go for the more expensive option.

For MIDI and sample sequencing in one, *OctaMED's* your man. See the Sequencers panel for more about *OctaMED* and the rest.

• ***MIDI GEAR*** When you're starting out, MIDI gear isn't essential, but when you can afford some, it's well worth shelling out for.

The range of MIDI instruments on the market is huge – you should think carefully before splashing out on your first box. I can't tell you which bits of kit to get, because everyone has different needs. Even so, here are a few general tips.

1. If you want to make techno, acid or ambient stuff, a MIDI-compatible analogue synth is a safe bet. A Cheetah MS6, or a MIDI retro-fitted Moog would both serve you well.
2. Drum machines can be just the thing to expand your set-up, but you'll be limited to using the same sounds in all your tracks. Bear this in mind if you're easily bored by hearing the same samples.
3. If you don't want gurgling bleepy fart noises, take a look at Yamaha's SY range of multi-timbral synths. They'll give you a good selection of pianos, strings, basses and all those other bread and butter pop sounds. Roland's JV range is also well worth checking out.
4. More and more effects units are supporting MIDI these days. Get a MIDI compatible box, and you'll have far more precise control over it.

• ***A MIXER*** If you're writing music for games or demos, you won't need a mixer, but if you want to record your tunes, it's a must. You probably don't want to go splashing out too much on a box that doesn't actually make any noise (apart from background noise that is), so I'd advise you go for a simple, cheap option. Probably the best place to look is Tandy. Look out for their end-of-line models and sale offers, and you should be able to pick up something that'll do the job for around £30-£50. CU

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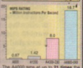

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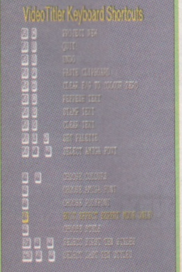
VideoTitler Keyboard Shortcuts

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[illegible] TEXT
STAMP TEXT
CLEAR TEXT
GET PALETTE
SELECT AMIGA FONT
CHOOSE COLOURS
CHOOSE AMIGA FONT
CHOOSE POLYFONT
[illegible]
CHOOSE STYLE
SELECT FIRST TEN STYLES
SELECT LAST TEN STYLES

You may recall that in my first tutorial on *VideoTitler*, I suggested that you made a note of the short-cut keyboard commands for the various features of the program. Well, just in case you forgot to write them down, I have included a useful table of all the keyboard shortcuts in the pic below left.

As you get more adventurous in your use of *VideoTitler*, you will find the use of the keyboard is the only way to achieve some effects. Try this quick experiment: select the option to enter text in a normal Amiga Font – use 'Text>Entry' from the menu or click once anywhere on the screen with the right mouse button to bring up the text entry crosshairs – now before you push '<Enter>', use the '<Amiga> <F1> to <F10>' key combinations to cycle through the various fonts you have selected for use in the program. When you have a font that you like, use the '<Alt> <F1> to <F10>' and '<Ctrl> <F1> to <F10>' keys to cycle through the 20 effects. You can also use the F1 to F5 keys alone, to change the colours of the various elements as you go.

BEST WAY

I am sure that once you get the hang of it, you will find this is best way to use *VideoTitler*. You can switch the font, the colours and the effects to get the most pleasing result. The same techniques will work for the Polyfonts supplied with *VideoTitler*. These fonts give you the option to change the size and distort the text as we have done over the past two months. What you can't do is to change from a Polyfont to an Amiga font, or alter the text once it has been rendered. If you want to make a change like that you must erase it and start again.

VideoTitler came out before *Deluxe Paint III*, so the animation features are basic by comparison. There are no automated effects to create spinning titles, or any of the spectacular effects you may have seen with *Deluxe Paint*. Having said that, the basic animation in *VideoTitler* works, it just means that you have the effort of creating the frames manually. But, it can still be useful to create a small animated effect for a short title sequence. An example would be an animation where the text grows over time.

GRID EFFECT

To try this effect out, start off by creating a Grid as we have done before, using the 'Edit>Clear To>Blocks' pulldown. You will use the Grid to position the text as you go through creating the animation frames. Once you have created the Grid, open the animation file by using the 'Project>ANIM' menu. Give the file a name like 'CUTEST.ANIM'.

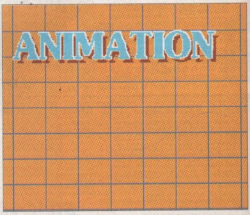
THE ANIMATION GAME

If you can't wait to get started with animation and titles and you have a copy of *DPaint* lying around you can get started straight away. Simply save out your files as described in the tutorial, but give them names ending in numbers, like 'Anim01' etc. these can then be loaded directly into *DPaint*.

Double click on *DPaint's* icon to run the program. Using the menu button select load picture and the usual loading requestor will appear. Select the first of your sequence of files and then enter the number of total files into the text gadget at the bottom of the requestor. All the files will now be loaded in sequence and made into an animation. This means that you can now save out your animation as an anim file from *DPaint*, or just use it from within *DPaint* itself.

Now create your text using a Polyfont as we have done before. Do not alter the size, just position it in the top left of the Grid, as shown in the example below. Click down with the right mouse button when you are happy with the position. Now use the '<Right-Amiga> Z' key combination to clear the Grid, which should leave your text on a plain screen. Now press the '<Enter>' key on the numeric pad or use the 'Project>ANIM>Add Frame' from the pulldown. The mouse pointer will change to '[WAIT]' for a few seconds while VideoTitler saves the first frame away. Now use '<Right-Amiga> C' to clear the current text.

Recreate the Grid as before, and enter the same text again, being careful to use exactly the same spacing and font as you did before. Now pull out the text to make it a bit bigger, position the top right corner of the font in the top right



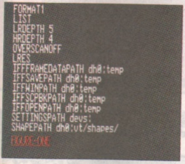
Here's the start of a short animation sequence to run in *VideoTitler*. First, we create a grid to help us when we position the text. It will be deleted later.

corner of the Grid and stamp it down as before. Erase the Grid, save the frame and repeat the operation, making the text a bit bigger each time. To get a decent animation, you will need to make about 20 frames, so this will take a bit of time. When you have finished, go to the 'Project>ANIM' pulldown again and close the animation file. Once you have built the animation, the best way to see it is using *Deluxe Paint*, or another animation viewer. You could use *LCA* on the *VideoTitler* disk, but the tutorial for that is next month.

EXPERT MODE

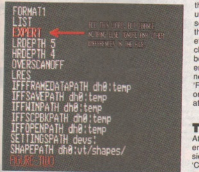
Moving on to the more complex areas of *VideoTitler* now – it's possible that the following tips may seem like double-dutch to less experienced Amiga-users. I'm not trying to sound conceited but to get the most from *VideoTitler* you'll need to have a fairly well-developed understanding of the Amiga.

VideoTitler comes with 20 text effects built in. Some of them you may like and others you may feel are a waste of space. Well, Expert Mode allows you to get at them and change the effect to your liking. Start off by making a back-up copy of your *VideoTitler* disk, by that I mean the main program disk not the extra data disk. Using the copy, open the file called 'VideoTitler', using a text editor, in the same way that you would edit your start-up sequence file or any other text file. The file is quite long, but the change that you need to make is right near the start. Look at Figure 1, that shows the initial state of the file. After the word 'LIST', insert a line and enter the word 'EXPERT'. After the change, your file should look like Figure 2.



```
FORMAT1
LIST
LRDEPTH 5
HRDEPTH 4
OVERSCANOFF
LRES
IFFFRAMEDATAPATH dh0:temp
IFFSAVEPATH dh0:temp
IFFWINPATH dh0:temp
IFFSCPBKPATH dh0:temp
IFFOPENPATH dh0:temp
SETTINGSPATH devs:
SHAPEPATH dh0:vt/shapes/
```

Figure 1: Here's the start-up sequence for *VideoTitler*. To get into Expert mode we'll need to edit it.



```
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LIST
EXPERT
LRDEPTH 5
HRDEPTH 4
OVERSCANOFF
LRES
IFFFRAMEDATAPATH dh0:temp
IFFSAVEPATH dh0:temp
IFFWINPATH dh0:temp
IFFSCPBKPATH dh0:temp
IFFOPENPATH dh0:temp
SETTINGSPATH devs:
SHAPEPATH dh0:vt/shapes/
```
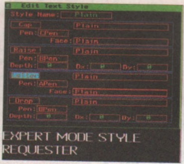
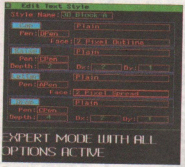

Figure 2: Okay, the line we need to add is 'Expert'. Place it in the position indicated in the pic.



Style Name: Plain
Cap: Plain
Pen: CPen
Face: Plain
Raise: Plain
Pen: BPen
Depth: 0 Dx: 0 Dy: 0
Letter: Plain
Pen: APen
Face: Plain
Drop: Plain
Pen: BPen
Depth: 0 Dx: 0 Dy: 0

Figure 3: In Expert Mode you can get a detailed screen showing the font style that you've selected.



Style Name: 3D Block A
Cap: Plain
Pen: DPen
Face: 2 Pixel Outline
Raise: Plain
Pen: CPen
Depth: 2 Dx: 2 Dy: 1
Letter: Plain
Pen: APen
Face: 2 Pixel Spread
Drop: Plain
Pen: CPen
Depth: 4 Dx: 2 Dy: 1

Figure 4: Here, we've selected all options and made them active. Hit F9 to see this screen.

LOAD IT UP

Now load up VideoTitler and enter some text. Use any font you like and select the 'Plain' effect from either the pulldown or by using '<Ctrl> F1' keys. Now before you render the text, hit the 'F9' key. You should then see a screen like Figure 3. Close the requestor using the gadget at the top right, select a new effect using '<Ctrl> F3' and then hit 'F9' again. The screen will now look like Figure 4. To see how the effects work, cycle through the 20 pre-set effects and note how the parameters are changed for each one. Some of the option boxes give you a menu to select from and others need a value typed in. You can bring up this new requestor box at any time by pushing the 'F10' key, hi-lighting an effect and then clicking on the new 'Edit Style' box that will now appear at the bottom of the 'Text Styles' screen.

TEXT EFFECT

At the top of the requestor is a box for you to enter a name for the effect. Down the left-hand side of the requestor are four boxes labelled 'Cap', 'Raise', 'Letter' and 'Drop'. These boxes are all switches, click on them with the right mouse button to activate or deactivate the option. The box is hi-lighted when active. The four 'Pen:' boxes, give you the option of selecting one of the four preset colours for that part of the character. The 'Cap' effect only applies to capital letters, whilst the 'Letter' effect acts on the whole font by default, unless the 'Cap' option is set. You can set the 'Letters' to one effect and have the capitals in another by use of these two boxes. 'Raise' is a 3D effect that appears to come towards you and 'Drop' appears to go away. You change the size of the effect by giving a 'Depth:' and then a 'Dx:' and 'Dy:' offset. The 'Face:' boxes bring up a requestor as in Figure 5 above, whilst the remaining three boxes bring up the requestor in Figure 6 below. Most of the options are self explanatory, but a little bit of trial and error will enable you to get a pleasing effect. Finally, any changes you make, will only be valid for the current session of *VideoTitler*, unless you save them in a settings file. You can either make this your default settings file or save it under another name and load it as required.

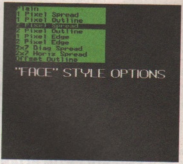


Figure 5: Text effects are easy to achieve with VideoTitler. Here we've selected a raised text option.

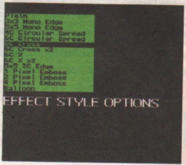


Figure 6: To change the text effects, use one of the options listed here.

UNDER WRAPS

That about wraps up the tutorial for *VideoTitler* for this month. For creating basic text title graphics it gives you all the tools that you need. But, it is my personal view that you also need a copy of *Deluxe Paint* to add a bit more finesse to your titles. As *Deluxe Paint* has been included with most Amigas sold in the last few years this should not be a problem. I also feel that a program to create a slide show and play animations is also a useful addition. Well, this is where *Lights, Camera, Action*, or *LCA* comes in. Fortunately, this was included on the *VideoTitler* disk.

NEXT MONTH

That's all folks. But don't worry, next month Jim will show you how to take your graphics and animations and create a sequence for outputting to video.

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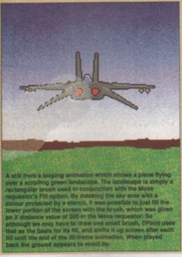


A still from a looping animation which shows a plane flying over a scrolling green landscape. The landscape is simply a rectangular brush used in conjunction with the Move requestor's Fill option. By masking the sky area with a colour protected by a stencil, it was possible to just fill the lower portion of the screen with the brush, which was given an X distance value of 200 in the Move requestor. So although we only have to draw one small brush, *DPaint* uses that as the basis for its fill, and shifts it up screen after each fill until the end of the 20-frame animation. When played back the ground appears to scoot by.

DELUXE PAINT

PART 8

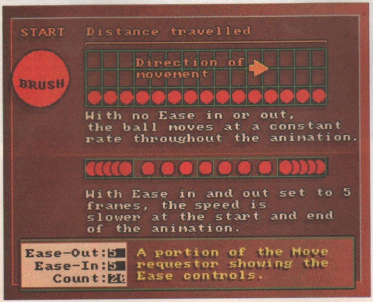
Getting more animated by the issue, Peter Lee keeps things moving in this month's *DPaint* tutorial with his no-frills fills approach, and builds up momentum with ease. The metaphors keep rolling like rock slides too...

Last issue we looked at simple effects using the move requestor. This is Mission Control for automatic animation, and once you're really familiar with it, it'll save you hours of work and make you look brilliant into the bargain. Let's pick up from last time, still examining that small but perfectly formed requestor.

Unfortunately, *DPaint* lacks a true path function for defining complex routes for objects. You can't draw a squiggly line and expect an animated object to follow it, but by building up your animation 10 or so frames at a time, then starting the next step where the first one left off, you can create complicated direction changes – for instance a ball bouncing across all four corners of the screen. The program will do this semi-automatically for you. As long as you leave the Go Back button alone (i.e. off), *DPaint* uses the screen position where the last brush draw took place as its starting point. It takes some fiddly testing to get the position exactly where you want it, but thanks to the Preview option you can watch the projected movement being played out before committing the program to stamping down the animation by clicking on the Draw button.

EASY DOES IT

In the real world objects don't just start moving and keep going at a constant rate. A car, for example, slows down after hitting something, and likewise a ball loses some of its momentum after colliding with another object. You can actually simulate changes in the speed of an object in two ways within *DPaint* – the clumsy way is to create an animation of several sections where the moving object travels different distances in a given number of frames. For example, an object which 'falls' -100 Y units in 10 frames will appear to move more quickly than one which travels only 50 units in the same number of frames. But instead of having to work out momentum on a hit and miss basis, *DPaint* has a built-in function on the Move requestor which calculates all this for you. It's called Ease Out and Ease In. Any number of frames you enter in the Ease box will be used by *DPaint* to calculate momentum at either the beginning of the sequence (Ease IN), or the end (Ease OUT). For any animation smaller than 20 frames the effects are minimal, but for longer stuff they can add realism to movement



With no Ease in or out, the ball moves at a constant rate throughout the animation.

With Ease in and out set to 5 frames, the speed is slower at the start and end of the animation.

Ease-Out: 5
Ease-In: 5
Count: 20

A portion of the Move requestor showing the Ease controls.

HAPPY TRAILS

The animation requestor also offers a superb function called Trails. Activating this box will set *DPaint* animating your brush according to the figures you've put into the Angle and Distance boxes, but instead of drawing a new brush position for every frame, it 'remembers' the earlier positions and includes them too. Sounds like a recipe for a total mess, but you can make it work to your advantage. In my example I've used a deck of cards fanning out; as the card brush is rotated in the Z angle the previous cards stay put, and the new brushes are drawn over them at increasing angles throughout the 20 frames of animation. So by frame 20, what began as one brush has built up to a whole pack, which has been fanned out on top of itself. This effect is excellent for titling, where text can be made to come out of the screen at the viewer (by use of the zooming Z plane move control as outlined last month) as it rotates to a standstill.

FILLS

The final tool on the Move requestor is Fill. If you had a brush and left all the Move parameters at zero, clicking on fill would be identical to using the main Fill tool from *DPaint's* drawing screen with From Brush selected, only over as many animation frames as you requested. The real power of the function is that it can use Angle and Distance figures too, and the real gem is that if you

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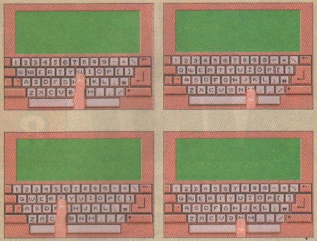
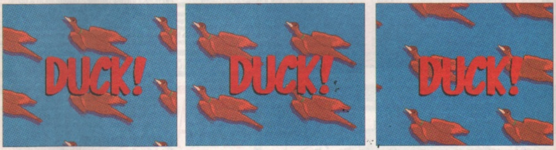
Left: Easy does it – the Move requestor allows you to effectively vary the speed of an object at the start and end of its movement. This gives a truer sense of momentum.



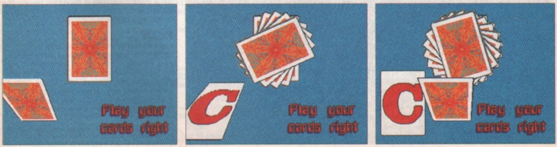
MANUAL ANIMATION TECHNIQUE

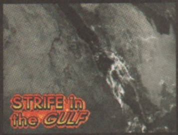
Sometimes the animation is more complex than the *DPaint* Move requestor can handle. Sometimes it's best done manually. This sequence is from a 30-frame animation which has an animated finger pressing the relevant keys to spell out a message on the display screen. First animate the finger. I drew the finger extended in frame 1 of a 2-frame animation, then copied the finished drawing to frame 2. A few minor alterations to the top joint and nail gave the impression that the finger had flexed. I copied both drawings of the finger to the spare screen, ready for cutting and pasting onto the animation. I deleted the two frames I'd used as my scratchpad, and drew the keyboard screen. I added the text at this point too. Once this was finished I created 20 new frames based on this screen. I now had 30 frames, each showing the keyboard, screen and all the text, but with no movement at all. But by switching to the spare screen and picking up either the straight or crooked finger as needed, I placed the brush on the relevant key. I worked backwards from frame 22. This left eight static frames at the end of the animation, showing the keyboard and text for an extended period as the animation ended. On frame 22 I used the crooked finger brush, positioned over the N on the keyboard. Pressing key 1 took me to frame 21 and I placed the extended finger brush over key N and erased the display screen N. If you look at this routine in forward mode you have a finger poised over a letter in frame 21 and no letter N on screen; then on frame 22 the finger flexes and presto, the N appears. You have to do this right back to frame one, remembering to erase more letters as you go until frame 1 has an finger over the letter C, with a blank display.

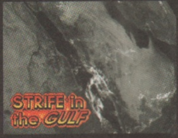

DUCK!
DUCK!
DUCK!

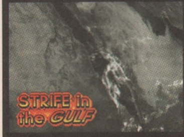
Hilda Ogden would have been proud of our flying ducks animation. Actually this walk-through doesn't look that impressive but the animation is actually very good and, more importantly, is very simple to create. It's nothing more than a brush that has been told to move in a certain direction. For the full info check out the text below.

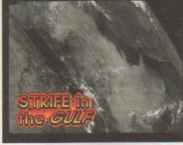
» have previously altered the perspective readings of your brush (April issue, tutorial 3), it will base the fill animation on those. Above is a walk-through of a simple flying ducks wallpaper animation I created as the background for a title sequence. Once you've drawn your design, cut it out as a brush and register it in your chosen starting position by clicking the left mouse button and then Undo-ing it from the tool menu. Set the number of animation frames you'd like – 20 is a good starting point. In my case I wanted the ducks to fly upwards, so I set the position in the lower right of the screen. Now call up the Move requestor (capital M). The figures you enter in the X and Y distance boxes (on the top row) to a large extent depend on how big your brush is. You need to alter the figures and Preview the animation several times to make sure your brush just goes off the top left of the screen to create a seamless loop as the sequence is played back. In our direction, we need to decrease both the X and Y measurements by at least 200, so I started with a -200 value in the X distance field, and 200 in the Y, until I hit on the right figure. Once you're happy with the preview, just click on the Fill box, and watch *DPaint* work its magic by filling successive screens with multiple versions of your single brush, all moving in unison across the screen. Another use for the Fill option is scrolling landscapes or cloud scenes. Using the same technique I've been able to simulate a plane flying over the ground as clouds streak by. Why not try it now you know how? *TIP:* To have two screen fills working after each other (sky and land) you will have to use the Stencil function to protect the already drawn sequence as *DPaint* fills in the other. Or... you could wait until next month when we'll be unwrapping the secrets and uses of Animbrushes.



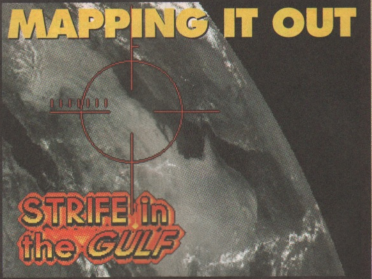






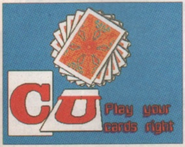


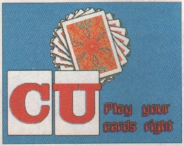
MAPPING IT OUT



This animation allows you to scroll a background much larger than your current screen – so for instance you could have a detailed map of the British Isles two screens wide, and pan around it during the animation. Getting the effect is easy, if repetitive, but it works well and can be used to re-create parallax perspective scrolling using multiple images. The image you want to use for scrolling should be drawn in *DPaint's* High Resolution mode, which has 16 colours and a screen size of 640 by 400. You can draw a regular pattern or map of the locality. I've used a satellite image of the Middle East. If you're drawing from scratch, save this high-res image to disk for safety, then change Screen Modes to low-res. When *DPaint* asks if you want to shrink the image to fit the new screen size (320 by 200), say no. You will then see part of your original high-res image on screen, seemingly magnified (but actually just displayed in the wrong resolution).

Use the cursor keys to scroll around the picture. It's this ability to show on your monitor a portion of a bigger picture that is the key to the effect. If you move to the Spare screen now (keyboard j), you will find the page size is as large as your alternate image, but *DPaint* can't animate with a page bigger than the screen, so go to Screen Mode menu option and set the size to Standard (320 by 200). This won't affect your spare page, which still contains the whole original image. Now create a number of frames – 15 or so is a good starting point. The repetitive stuff begins now... Switch back to the spare page (with your big image on) and scroll around with the cursor keys until you get to an image you want as your first frame. Now Copy the screen onto the Spare screen (the spare screen is now the first frame of your animation). Use the pull-down menu option for this process. What you've done is copy a screenful of image from your big picture into a screen-size frame of animaton. Even with the spare screen showing portions of your big image, you can advance the animation on the alternate screen; press key 2 to move to frame 2. Next, use the cursor keys to move your big image slightly in the desired directions (not too far or the animation will be jerky; two key presses are enough). Now Copy this screen image to the animation in the same way as the first, and it becomes the image for frame 2. Press key 2 to advance to the next animation frame, scroll in the appropriate direction, copy the screenful of the large image into the frame, and so on until you have reached the last animation frame. Switch back to the animation sequence and save the animation for safety, press key 6 and watch the fun. Now you can add text, an animbrush or other image on top of the scrolling background to suit your needs. It's a really clever effect, but not too difficult once you grab the hang of it. The only snag is that sometimes things get a little too much for the Amiga, and you can get corruption on the display – so the motto 'Save Often' has never been more relevant. In my example you can see five frames taken from a 30-frame animation which has static text and a scrolling background image (the world); the animation ends with a target sight drifting in to the Gulf region.





Left: Scenes from a 20-frame animation which shows how the simple Move/Trail option in the Animation requestor can produce an intriguing effect. The deck of cards fans out at the top of the screen because the Z angle in the Move requestor was set to 180, and Trails was activated to draw the card brush at different angles on top of itself. The flipping cards use techniques discussed in an earlier tutorial and were overlaid after the fan effect.

NEXT MONTH

It's time to let your animbrushes do the walking with some expert advice, plus more animation techniques geared especially at lucky *DPaint IV* owners. Till then – keep it movin'...

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With PacMan now complete, Dave Smithson reveals a few games programming secrets. This month – how to produce a continuous screen scroll.

PART

6

The Amiga may be a versatile business machine, a state of the art graphics workstation and it may even pack a punch in the DTP market, but no one could possibly doubt what type of software the machine's designers built it for – yep, for playing games. As an AMOS user, you undoubtedly already know that AMOS provides all the commands that you could ever want for writing games software, but what you may not have realised is that AMOS owes much of its power to the Amiga's hardware designers. Although AMOS provides us with the language to address that hardware, what other computers offer hardware sprites, an ultrafast blitter and hardware scrolling as standard? Certainly not the humble PC!

SCROLL IN THE PARK

Hardware scrolling is undoubtedly one of AMOS' most powerful facilities. With it you can create ultra-smooth scrolling effects that wouldn't look out of place next to the very best that the console manufacturers have to offer. It's explained clearly in the AMOS manual – which is a very good reason to actually get hold of one – but for those of you without a manual I'll explain more about hardware scrolling next month. This month's 'Games Programming Made Easy' is devoted entirely to a scrolling effect that is used extensively in shoot 'em up games – continuous background scrolling.

If you have played around with hardware scrolling, then you'll already know that although hardware scrolling is powerful, it does have a number of disadvantages. For starters, it can eat up a great deal of memory simply because it scrolls entire screens. This isn't too much of a problem if you're writing a game that uses a very small scroll area (say, for example, two low resolution screens). But what do you do if you want to write a shoot 'em up (or whatever) that needs to scroll an ever-changing background? Take a game such as the classic *Scramble*, for example. If you were to hold just a single level of *Scramble's* background graphics in memory as a continuous bitmap, you'd soon run out of valuable Chip memory. This then, is where my little routine comes in.

MEGA MEMORY SAVER

The code published this month demonstrates how to produce a continuous scroll without eating up massive amounts of memory. Our demonstration graphics generate a level that – if it were to be stored as a continuous bitmap – would be 1280 by 200 pixels in size. When you consider that the graphics use 16 colours, this picture would eat up a massive 128k. My routine, on the other hand, is just 15k long (including graphics) and even when run, it only takes up 64k. Okay, so we've only managed to halve the amount of memory used, but the great thing about this routine is that no matter how much you extend each screen, the amount of memory used will only increase by a couple of k! Now that's impressive!

So how does it work? Well, believe it or not, it's actually exactly the same technique that is used by most commercial games programmers to produce a smooth scrolling background that appears to span many screens. A similar technique, for example, was used by DMA Design's Dave Jones (he of *Lemmings* fame!) on his first game, *Menace* (remember that one!?). The basic idea is that the screen display is built up as you progress through the game instead of loading in a gigantic bitmap at the start. If you think about it, this is actually a more logical way of working – after all, if your game runs in low resolution, the player will only ever be able to see a maximum of 320 by 256 pixels at any one time, so there seems little point in keeping the rest of the background in memory.

Instead, by using a combination of hardware scrolling and AMOS' ability to paste down graphics at high speed using the Amiga's blitter, the scroll area is drawn using a set of graphic blocks called 'Icons'. Don't confuse AMOS' icons with Workbench icons, however – an icon in AMOS is simply a rectangular graphic block that can be combined with others to generate a larger image.

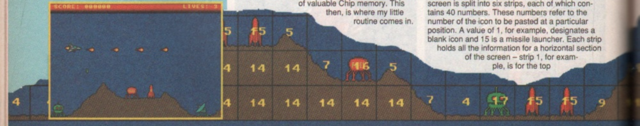
Anyway, back to our scrolling routine. The best way to demonstrate how it works is to break it down into a series of steps. Let's take a look at each step in turn.

BLUE HEDGEHOGS

Let's get stuck into the source code which incidentally (for the bone idle amongst you), you can find on this month's coverdisk. I have written it in such a way that it can quickly and reasonably easily be turned into a fully-fledged game – indeed, I've even marked the section of code that should contain the rest of your game code. The graphics I've used are based around the classic *Scramble* arcade game that used to be popular in the arcades before the world became swamped by blue hedgehogs. If you're feeling adventurous, why not have a go at turning it into a game.

The two important routines are INITSCROLL and SCROLLSCREEN, but you should also take a good long look at the INIT procedure. Within this expertly crafted embodiment of the programmer's art you'll find the section of code that sets up an array containing all the information controlling the layout of the entire scroll area. Note how the screen is split into six strips, each of which contains 40 numbers. These numbers refer to the number of the icon to be pasted at a particular position. A value of 1, for example, designates a blank icon and 15 is a missile launcher. Each strip holds all the information for a horizontal section of the screen – strip 1, for example, is for the top

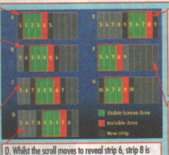
Ever wanted to write your own scrolling shoot 'em up? Well now you can with this month's handy scroll routine!



THE INIT PROCEDURE

No it's not some distant relation of The Andromeda Strain, rather it a part of this AMOS program that sets up an array which, in turn, contains all the information needed to control the layout of the entire screen area.

A. Before the scroll begins, the initial screen area is initialised by drawing the visible screen area, the scroll area and the two boundaries on either side of the viewport. Note how the screen viewport is initially offset so that there is a invinsible area to the left of the screen – this will eventually be displayed when the scroll routine reaches step f. At the moment, strip 5 is drawn into it.



B. The scroll is then started and whilst it scrolls to reveal strip 4, strip 6 is drawn on either side of the viewport. All the icons that must be drawn to complete both strips are drawn at once to keep the scroll speed up.

C. Whilst the scroll moves to reveal strip 5, strip 7 is drawn on either side of the viewport. Note that we will need two pointers to keep this redraw process up – one that keeps track of the screen offset position and another that indicates which strip is to be drawn.

D. Whilst the scroll moves to reveal strip 6, strip 8 is drawn on either side of the viewport.

E. Looking at the diagram, you will notice that the screen contains two copies of the same display which, in turn, is split into five strips – 5, 6, 7, 8 and 9. At this point, we reset the position of the viewport so that it now displays the first half of the screen.

F. With the viewport position reset, the whole scrolling process starts again by scrolling the viewport to display strip 9 whilst drawing strip 10 onto either side of the viewport. Once this is done, the scroll routine then jumps to step 'B'.

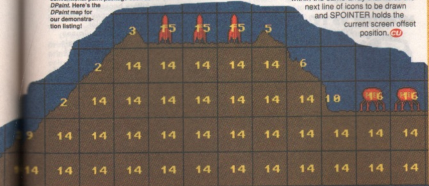
line of graphics and strip 6 is for the graphics that will appear at the bottom of the screen.

Designing screens of this sort of size is best done using a paint program such as *DPaint*. All I did was to load up *DPaint* in low resolution format, set the page size to 1280 by 200 and then I used the 'Grid' tool to create a grid of 32 by 32 pixels. And then, simply by cutting the icons out as brushes, I was able to draw up a mock of the scroll area which I then converted to the data you see here. I found it best to feed the data in a screen at a time and if you want to create larger scroll areas, draw them up in smaller chunks remembering to cleanly 'link' each section.

SPEED FIEND

Moving on, the INITSCROLL routine is essentially the code version of step 'A' detailed in the diagram above. What it does it to open up the screen, size and position it using 'Screen Display' and 'Screen Offset' respectively, and then draw up the initial display using the first set of icons. Once this is done, the 'game' effectively starts and the scroll commences with a call to the SCROLLSCREEN procedure. I had a lot of speed problems with this routine simply because although AMOS can draw the screen icons very, very fast indeed, it takes time to set up the Amiga's blitter, so I spent more than a couple of hours optimising this routine so that the new strips of icons were drawn in less than 1/50th of a second. Even once compiled using Europress' snazzy new AMOS Pro Compiler, this problem still persisted. I had originally intended to spread the work load so that only a single icon was drawn during any one vertical blank, but this method actually turned out to be much slower than drawing all of them at once!

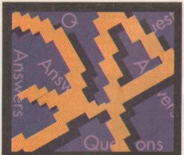
The SCROLLSCREEN procedure also makes extensive use of a variable called 'COUNTER'. This variable is very important indeed as it is used to keep the screen redraw process in sync – because the new strips of graphic data only need to be drawn every 32 pixels of hardware scroll, the counter is used to let the SCROLLROUTINE know when it should start drawing again. All it does is to continuously count from 1 to 32. When the counter equals 1, the strips are drawn but for the rest of the time, the redraw code remains dormant. Three other variables are very important too – XDATA, IPOINTER and SPOINTER. XDATA points to the position within the MAPDATA() array that contains the first strip of data for the visible screen area, IPOINTER points to the position within the same array that holds the next line of icons to be drawn and SPOINTER holds the current screen offset position.



Below: The best way to design scrollable screens is to use a conventional paint package such as *DPaint*. Here's the *DPaint* map for our demonstration listing!

SCROLL DEMONSTRATION

```
Dim MAPDATA(6,80)
SPOINTER=0 : IPOINTER=0 : LEVELSIZE=0
Global SPOINTER,IPOINTER,MAPDATA()
Global XDATA,COUNTER,LEVELSIZE
MAIN
End
Procedure MAIN
Hide : INIT
Repeat
TITLEPAGE : QUIT=Param
If QUIT=1
INITSCROLL STARTSCROLL
End If
Until QUIT=2
End Proc
Procedure INIT
Read LEVELSIZE
For A=0 To 5 : For B=0 To LEVELSIZE
Read MAPDATA(A,B)
Next B
Next A
Data 39
Data 1,1,1,1,1,1,1,1,1,1
Data 1,1,1,1,1,1,1,1,1,1
Data 1,1,1,1,1,1,1,1,1,1
Data 1,1,1,1,1,1,1,1,1,1
Data 1,1,1,1,1,1,1,1,1,1
Data 1,1,1,1,1,1,1,1,1,1
Data 1,1,1,3,15,15,15,5,1,1
Data 1,1,1,1,1,1,1,1,1,1
Data 1,1,1,1,1,1,1,1,1,1
Data 1,1,1,1,1,1,1,1,1,1
Data 1,1,2,14,14,14,14,14,6,1
Data 1,1,1,1,1,1,1,1,1,1
Data 1,1,1,1,3,18,15,15,5,1
Data 1,1,1,1,1,1,1,1,1,1
Data 1,2,14,14,14,14,14,14,14,10
Data 16,16,17,5,1,1,1,1,1,1
Data 1,1,1,2,14,14,14,14,14,7
Data 16,5,1,1,1,1,1,1,3,18
Data 9,14,14,14,14,14,14,14,14,14
Data 14,14,14,14,10,15,15,15,5,1
Data 4,4,9,14,14,14,14,14,14,14
Data 14,14,7,4,17,15,15,9,14,14
Data 14,14,14,14,14,14,14,14,14
Data 14,14,14,14,14,14,14,14,14
Data 14,14,14,14,14,14,14,14,14
Data 14,14,14,14,14,14,14,14,7
End Proc
Procedure TITLEPAGE
Screen Open 0,320,200,32,Lowres:
Curs Off : Cls 0 : Pen 1 : Paper 0
Locate 0,6 : Centre "Scroll Demonstration"
Locate 0,7 : Centre "By Dave Smithson"
Locate 0,10 : Centre "Press <Fire> To Start"
Locate 0,12 : Centre "Press <ESC> to Quit"
QUIT=0
Repeat
KY$=Inkey$ :KEY=Scancode
Wait Vbl
Until KEY=69 or Joy(1)=16
If Joy(1)=16
QUIT=1
Else
QUIT=2
End If
End Proc[QUIT]
Procedure INITSCROL
Screen Open 0,736,192,16,Lowres
Flash Off : Curs Off : Cls 0
Screen Display 0,128,48,320,200
Screen Offset 0,32,0 Screen Hide 0
Rem *** Load background graphics
Load "AMOS:ScrambleIcons.ABK"
Get Icon Palette
SPOINTER=32 : XDATA=0
IPOINTER=XDATA+10
Rem *** Draw main display + scroll buffer
For A=0 To 5 : For B=0 To 9
Paste Icon
SPOINTER+(B*32),A*32,MAPDATA(A,XDATA+B)
Next B : Next A
Rem *** Draw new strips
BSTRIP=SPOINTER-32 : FSTRIP=SPOINTER*11
For A=0 To 5
Paste Icon BSTRIP,A*32,MAPDATA(A,IPOINTER)
Paste Icon FSTRIP,A*32,MAPDATA(A,IPOINTER)
Next A : Double Buffer : Autoback 1
Screen Show 0
End Proc
Procedure STARTSCROLL
COUNTER=0
Repeat
SCROLLSCREEN
Rem *** Your game code goes here!!
Wait Vbl
Until IPOINTER=LEVELSIZE
End Proc
Procedure SCROLLSCREEN
COUNTER=COUNTER+1
If SPOINTER=352 Then SPOINTER=0
If COUNTER=1
For A=0 To 5 : Paste Icon
SPOINTER+320,A*32,MAPDATA(A,IPOINTER)
Paste Icon SPOINTER-32,A*32,MAPDATA(A,IPOINTER)
Next A
End If
Screen Offset 0,SPOINTER+COUNTER,0
If COUNTER=32
COUNTER=0 SPOINTER=SPOINTER+32
IPOINTER=IPOINTER+1
End If
End Proc
```



Mat Broomfield is here once more to answer all your technical problems and queries.

SECTOR OR BLOCK?

After reading your article in April's edition of CU AMIGA I was particularly interested in your version of disk organisation. According to you, disks are split into sectors and any partially used sectors cannot be accessed. I was wondering if you would clear up a problem for me. I thought that a disk is split into 80 concentric rings or tracks and is then split into sectors, the number of sectors depending upon which machine you are using (PC, Mac, or whatever).

If this is correct, then the computer is able to access the disk in blocks (usually 512 bytes) as you can give it an address of surface, track and sector number. According to you, if you write to, for example, surface 0, sector 1, you can no longer write to that sector so therefore you can only write to 11 different addresses, which I think is wrong.

You can access each block of data on the disk in the way I have mentioned, giving you a maximum number of disk addresses of 880. It is true that each file requires a different block, thus resulting in partially empty blocks. When a piece of data is written to a file, it then begins at the start of the *next* empty block and occupies as much space as it requires, resulting in partially filled blocks on the disk. I think that this is most important as if (again according to your example) a file is written to a complete sector at a time, the head is continually moving up and down the disk – hardly an efficient way of operating!

Having re-read this letter, I hope it doesn't sound too nasty, I'm genuinely interested to know which is correct, or even if my explanation is what you meant (in which case can I have your job!).

Mike Kavallierou, Bognor Regis, Sussex

My little disk diagram in the April issue clearly shows that *every one* of the 80 tracks is divided into 11 sectors. This is backed up by the little equation at the bottom of the diagram which says: 2 sides x 80 tracks x 11 sectors x 512 bytes = 901,120 bytes uncompressed capacity. I spent a while checking references in books before I wrote the piece, so I know that it's correct. However, just for clarification I offer you this entry from the Collins dictionary of Personal Computing:

'Sector or Segment a portion of a disk TRACK. A disk track is a circle on the disk surface, and the circle is magnetically divided into a number of sectors, often 10 sectors per track. Each sector will then store a set number of bytes, often 256. Programs or items of data that need less than a sector will nevertheless use the complete sector because the disk system does not work in units of less than one sector.'

Just remember that an Amiga disk track is split into 11 sectors not 10, and that each of these contains 512 bytes of data not 256.

1200 QUESTIONS

I own an Amiga 500 with 1Mb of RAM and an external drive which I use mainly for games. Now, however, with my GCSEs upon me, I find that its abilities are rather limited and I'm considering upgrading to an A1200.

I know that the A1200 comes with 2Mb of RAM as standard, which should mean that my DTP and word processing packages are less likely to crash, but is it actually faster at loading programs such as *Pagesetter*, which currently takes quite a while (after crashing several times)?

Will my external drive (a Roctec RF332C) be compatible with the A1200, and would an A500 compatible hard drive also work on the A1200?

Richard Levinson, Westbury-on-Trym, Bristol

In the first place, a lack of RAM shouldn't make your programs crash if they're well written. They should simply not perform up to their best abilities. I'm very surprised to hear you say that *Pagesetter* crashes often and I wonder if it could be your computer that's at fault, or are you perhaps using a copied version of the program? Because the pirates are keen to 'release' programs as quickly as possible, they often swap versions which are incomplete, and to the inexperienced user it could seem as if the program was simply not very stable.

Anyway, the A1200's floppy drive is no faster than the A500's, but if the speed at which a program loads is also determined by the rate at which the computer can process data as it's loaded (as in the case of some DTP packages), then the program will appear to load more quickly because the A1200's processor is many times faster than that of the A500.

Yes the Roctec RF332C is compatible with the A1200, but a hard drive designed for the DMA port isn't, as the A1200 locks this interface.

MONITOR VS TV

What's the difference between a monitor (Philips 8833 Mk II) and a SCART TV (Sony KVM1410)? I've asked in all the shops and they all say that a monitor is better than a SCART TV, which is better than a normal TV. Can you be more precise please?

I want to watch television in the privacy of my own room, but I'd also like to see my work (DTP, etc.) more clearly.

Richard Levinson, Westbury-on-Trym, Bristol

A television or monitor screen is created by beams of light shot by guns at the back of the tube. Naturally, the amount of detail that can be displayed depends upon the size of these beams of light – the smaller or more focussed the beam, the more detail is possible (the higher the resolution). The resolution of a screen is known as its dot pitch and monitors have a significantly smaller dot pitch than TVs. In fact, Sony refuse to give out the dot pitch for TVs, claiming that such information would turn TV marketing into a 'straight numbers battle' with no consideration for other features.

As for the difference between 'normal' TV and SCART, the circuitry in a TV is designed to display a composite video signal. The Amiga outputs such a signal, and using a SCART connection this signal reaches the display circuitry with virtually no degradation at all. When you connect the computer via the aerial (RF) socket, the signal must first be converted into Radio Frequency (by the computer's modulator) and then this RF signal is converted back into a video signal by the TV. These conversions exact a heavy toll on the picture quality.

VIRUS CHECKERS

I'm writing to you to vent my frustration which has been caused by some stupid basß_ß!* deciding to code something called the Byte Bandit virus. This obviously ingenious piece of coding has just robbed my 11 year-old brother and sister of £60 worth of software that they saved for a hell of a long time to buy. What do such people gain from this? Can't they find some useful way to use their obvious programming talent?

Is there any reason why the major software houses can't put virus checkers onto games disks in a similar manner to that which PD suppliers do? We are one of the supposedly dying breed that still buy original software, and as we pay £20 to £30 a time, don't we deserve some protection against this menace?

Sean Clarke, Blaina, Gwent

I agree with your opinions about the morons who spend their time writing viruses. I disagree that they must have programming talent – to a remotely competent programmer, Byte Bandit virus and its endless derivatives are a simple matter to create. It's just that 'real' programmers don't waste their time and energy on such mindless junk. It's clearly not worth trying to appeal to virus creators' sense of decency – they haven't got one.

Unfortunately software houses can't generally include virus killers because they will not work in harmony with the copy protection systems that most commercial companies use. Furthermore, new viruses are being created on an almost daily basis, so any protection system would be out of date long before it reached the shops.

I hate to say it, but your brother and sister must bear some of the blame themselves (and maybe you as their mentor) for the damage that the virus has caused to their software. A virus can't infect a write protected disk, no matter how 'clever' it is. Therefore, the very first thing that you should always do with new software is move the black write protect tab into its upwards position (so that you can see through the hole).

Furthermore, unless you have a hard drive, no virus can survive in the computer's memory if you turn the power off for 30 seconds.

PC FILE CONVERSION

Is there any (preferably cheap!!) way of loading PC files (for use with HiSoft Pascal) onto the Amiga. Naturally the disks will be DD rather than HD. I would also like a way of saving Amiga files in such a way that the PC can read them.

I'm desperate to do this because part of my (mainly boring) university course involves writing Pascal programs on the PC, and as I own an Amiga, I can't currently do any work at home.
Sean Clarke, Blaina, Gwent

There are lots of programs for converting files between the Amiga and PC. Some of the more upmarket ones such as *CrossDos* and *Dos 2 Dos* will even attempt to do some limited data conversion as well so that stuff written on an Amiga package will retain all formatting information when loaded on the PC's equivalent package.

Provided your Pascal program is merely ASCII files (which will presumably be compiled later) you can use one of the numerous PD programs that allow you to read and write to PC disks. I personally use MessySID 2, which is available for a couple of pounds from NBS PD (disk number U619). The disk contains a program for formatting low-density PC disks on an Amiga, and a version of SID which is capable of reading and writing PC disks.

If either of your Pascal programs are not capable of reading or writing in ASCII format then I suspect you won't be able to create runnable PC programs on your Amiga, although you can always use your word processor or text editor to script out your programs at home.

PRINTER DRIVERS

I realise that you must get printer driver enquiries every day, but my IBM is driving me to premature baldness. I have contacted IBM, CBM and several PD houses but no one can supply me with the correct driver for an IBM 3852-2 ink jet. Please don't get me wrong, I can get text out of it, but no colour or graphics.

One last thing, I can't find any DIP switches anywhere on the printer.

I hope that you or one of your ace readers can help.
Carl Austin, Stanwell, Staines

I personally know nothing about this printer, but as you say, perhaps one of our many whizzo readers can offer some solace?

Of course it's worth mentioning that most printers are able to emulate at least one other printer, and this is especially true of the colour ink jets which usually have some form of Hewlett Packard or Integrex emulation.

I spoke to Jeff Walker at JAM about your problem and he said that there may be a PD driver available, but that he doubted if it would work. He further opined that it's never worth buying an obscure printer (especially from auction) unless you are certain about being able to acquire a driver for it first.

As for your printer's lack of DIP switches, this is not necessarily a problem. Dual In-line Programming (DIP) switches used to be found on virtually all printers and they were used as a means of specifying things like the paper size, the emulation mode, the character set to be used, etc. Nowadays, many manufacturers prefer to use Electronic DIP Switches (EDS) which perform the same function, but are usually accessed by pressing a combination of buttons on the printer as you turn it on.

MAKING DRAWERS

I read CU AMIGA every month but I've never seen anything about creating drawers on a formatted disk to save my *DPaint* things on. Is this possible? If so, how do I do it using Workbench 1.2?
Dale Buckerton, Flintham, Notts

A drawer is basically a sub-division of a disk or even of another drawer. It's generally used to store related files all in the same place, and a disk can contain dozens, even hundreds of drawers.

To create a drawer under Workbench 1.2 you must duplicate a drawer which already exists. This is the reason for the 'Empty' folder on the Workbench disk. Simply select this icon and choose 'duplicate' from the Workbench menu.

If you are still running under 1.2 though, I would strongly suggest that you upgrade.

BECOMING SELF EMPLOYED

I have been interested in writing computer games for a living since I was small. When I left college I found a job as a programmer writing business software which suited me at first, but recently I have had the urge to leave and become a professional freelance games programmer specialising on the Amiga. This would allow me to develop my creative and artistic skills which are not being addressed in my current job. It would also give me the time to study other areas of life that interest me.

The reason for this letter is to ask about the practicalities in realising such a career move.

Will I need to declare myself as a sole trader or limited company or anything like that if I am working from home? How will income tax, National Insurance and VAT affect me? Assuming I wrote one saleable game each year to the standard of Geoff Crammond's *Grand Prix* or the *Shadow of the Beast* series, how much could I expect to earn each year?

I realise that sales of a game are not guaranteed, but I need to know the general salaries that can be earned games writing so that I can decide upon the feasibility of such a move.
Telaran Arrowood, Bensham Grove, Surrey

I congratulate you on your enthusiasm and drive, but I suspect that you need to understand your market a lot better than you currently do. I know of no commercial games programmers who are doing so without the financial backing of a software house. Supposing it takes you 18 months to write your first title; how will you support yourself during that time? What about graphics and music, are you competent at creating them or do you hope to 'muddle by'? And game design; most software companies employ people purely for this aspect of things, and programmers usually do just that.

Anyway, to answer your questions, no you don't need to declare yourself as a sole trader or anything like that. As soon as you start work you will be considered as self-employed. This means that you become responsible for your own tax affairs, and are liable to purchase national insurance stamps on a weekly basis. These entitle you to unemployment benefit if you fall out of work. If your income is low enough, you can apply for exemption to national insurance, although you will then lose some of the associated benefits. To find out more, you ought to speak to an accountant, and most will give their first appointment free of charge.

As for the returns that you can expect on a top quality game, this depends totally on who distributes and markets it and how. Try to do the job yourself and you probably won't see much of a reward, get a professional to do it and the rewards can run into six figures.

You've also got to think about conversions to other formats, copyrights and a whole bunch of other considerations.

On balance I think that you're probably best advised to try for a job with a software publisher whilst you learn more about the industry. Salaries range from less than £10,000 a year to over £30,000 although £15,000 is probably nearer to the average.

STAR LASER PAPER

I have a Star Laser 4 III printer. At present I can only print on A4 paper (the thickness of this sheet) and I want to print on card and paper of different sizes. I tried it with cards, but it will not go through the printer and when I set a different paper size it requests 'tray refill – A3' but I only have one tray.

I wrote to Star but they didn't respond. Can you help? Incidentally how much will it cost me to add a hard drive to my A500+?
Darren Mannix, Bulwell, Nottingham

Like most laser printers, the Star machines are very specific about the weight (thickness) of the paper on which they will print. The reasons for this are twofold: firstly the paper has to be moved around inside the system, being wrapped around rollers and so forth. The internal mechanisms are not strong enough to handle card or thick paper (which in any case tends to crease as it is fed around the rollers). The other reason is that the system used to deliver ink to the paper is very sensitive and card simply upsets this system.

If you want to output on card you would be much better of getting a print shop to do it.,Black and white artwork can even be photocopied onto card with reasonable results. As for an A3 paper tray, this is an optional extra and can be ordered directly from Star. Phone them on 0494 471111. A hard drive will cost you £150+ unless you buy a second hand one (which I don't recommend).

NEXT MONTH

Mat will be rushing back on his trusty white steed again next month. In the meantime, if you have any problems with your Amiga, write to him at CU AMIGA, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

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AMOS SPECIAL

'We aim to please' has always been our motto, and so we do. Get it while it's hot, here it is, for one month only – a Q&A special on our giveaway AMOS coverdisk, number 56.

STANDING ALONE

In reference to the AMOS coverdisks, please can you advise on the following problems:

1. I have tried to make a standalone disk as per details on page 20. However, I am unable to load any items from the Extras disk. I have tried using the load option and call up the directory using the requester. All that happens is that the program repeatedly prompts for the AMOS program disk. Please could you give me an idiots guide to this procedure?
2. I have also tried to make standalone programs by using the compiler to compile with a Workbench icon. This has also failed to work. Is it possible for you to define this procedure more clearly?
3. Finally I have compiled my program to run from AMOS, or tried to that is. I keep getting the message 'Not tested'. I have tested the program so I am a bit confused.

I would be grateful for any practical help that you can give in this area as all my programming efforts seem a waste of time and effort as I don't seem to be able to do anything with them other than run them from the AMOS Editor.
Pete Wood, Newport

Compiling can seem a little complicated, but it is actually quite simple. But let's deal with your initial query first. What I guess is happening is that you are inserting the Extras disk and then selecting 'Load'. The internal directory is still looking at the AMOS program disk, and so looks for it as soon as the file requestor appears. What you need to do is insert the AMOS program disk when prompted, and wait for the directory to appear. Once it has, remove the disk and insert the Extras disk. Now click with the right mouse button on the small circle button in the top left corner of the window. This calls up the devices list which will include the name of the currently inserted disk, the Extras one in this case. Now click on the name of the disk and the Extras directory will be revealed in all its glory!

To make a standalone program that runs from Workbench, this is what you do. Firstly, load the compiler as an accessory using 'Acc.Load' from the menu bar. Now load your program to be compiled and run it, to test it. Once it has finished running, run the Compiler accessory and wait for it to finish loading the appropriate data. Set the first two options to your style of compilation, depending on your own set-up (two drives, extra memory, etc.) and set the third icon to Workbench. Now click on 'Compile' and it should all work. If it doesn't, check that the first line of your program opens a screen for the program to work with, as programs compiled to Workbench don't automatically open a screen.

For your third question, running the program is the only sure fire way of testing it. I hope that all helps.

LLISTOMANIA

I have been tearing my hair out for the last week, and I only hope you can help me before I have to bin my computer and go to live in the mountains. I have recently moved to AMOS from STOS, and have ported some of my programs from STOS to AMOS. I have, however, come across a problem when it comes to printing out my listings. Being a careful coder, I always like to keep a hardcopy of anything I write, just in case. The AMOS manual refers to an instruction called LLIST, which is also present in STOS, and allows you to print out your listings at will. However, whenever I try to use this command, both in direct mode and edit mode, it refuses to work. What am I doing wrong?
G. Crookes, Winchester

You aren't the only person to fall foul of what has to be the single most requested problem ever. The fact of the matter is this: The LLIST command does not exist in AMOS. Yes, you're right in saying it was part of STOS, but that was where the problem originated. Most of the AMOS manual was copied from STOS when the program was written for the Amiga, and although LLIST wasn't included in the package, it was kept in the manual. To print out your program, here's what you have to do. First, select the whole listing as a block by pressing Control and 'A'. Once the listing is highlighted, select the 'Block Print' option from the blocks menu, or press Control and F10 to print your listing! Europress apologise for any inconvenience caused.

MENU MASTER

Wow, I thought as I grabbed CU Amiga off the shelf. A complete guide to AMOS! I couldn't believe my luck. I've had the package for quite a while, but have never really spent any time with it – it all seems like such hard work! Tearing home and flicking through your guide I spotted the section on Menus (page 15). I have a couple of ideas for programs that need menus, so I quickly read through and typed in the listings. This is where the trouble started. No matter what I do, I can't get the long listing (Table 11) to work! What do I have to do?
Joe Abbro, Finchley

Gremlins got to that listing between it being written and being laid out, and unfortunately one of the most important lines went walkabout. All you need to do is add the line 'ON MENU ON' immediately after the 'MENU ON' line. Just to clear things up once and for all, here's that listing as it should have read.

```
Menu$(1)="Mouse  "
Menu$(2)="Quit  "
Menu$(1,1)="Arrow
":Menu$(1,2)="Cross":Menu$(1,3
)="Clock"
Menu$(2,1)="Editor":
Menu$(2,2)="Direct"
Menu On
On Menu On
On Menu Proc MSE, QWIT
Rem: Do Something
Do
  For X=1 to 100
  Print X;
  Next X
Loop
Procedure MSE
  If Choice(2) then Change
Mouse Choice(2)
End Proc
Procedure QWIT
  If Choice(2)=1 Then Edit
  If Choice(2)=2 Then Direct
  On Menu On
End Proc
```

FOR THE UNDER FIVES

Often I read of programmers using a set of 'building blocks' to build up backdrops for games such as shoot 'em ups and platform games, and I am very interested in doing the same kind of thing with AMOS. I have tried drawing two screens and putting them together, but that just uses loads of memory. Is there an easier way of doing it?
Louise Runner, Birmingham

The simplest way is to use something like TAME (Total AMOS Map Editor), which is a separate program used for generating map-based backdrops. If you don't want to shell out for it, here's a way of doing it just using AMOS and a handy art package, although this way is a little trickier. First, you need to decide what sorts of blocks you'll need, and what size to have them – the smaller the better. Let's say you use three different blocks for the sky, and three for the ground, and you have them sized as 32 pixels by 32 pixels. Draw your blocks on a single screen with your art package, and load them into the Object Editor in AMOS, otherwise referred to as the Sprite Editor. Now save them out as an Icon bank.

Cut out your blocks and save them as a memory bank. Now comes the hard part – mapping them out. Get a sheet of paper and mark out your blocks. Don't worry about drawing – just note down the numbers of the blocks as you mark them down. If you have a screen 10 blocks by 8 blocks, and the top line is sky, you might end up with something like: 1, 1, 2, 1, 2, 3, 2, 1, 2, 1

What you're going to do now is turn these numbers into a screen. Go back to the editor, and load the sprite bank. Now use the command 'Paste Icon' with a For...Next loop to draw the screen. To show you what I mean, create three sky icons and three ground icons, saving them in a single bank in that order, and then try this program.

```
Screen Open
1,300,200,32,Lowres
For A=1 to 5
  For B=1 to 5
    Read C
    Paste Icon B*32,A*32,C
  Next B
Next A
Wait Key
Data 1,2,1,3,1
Data 1,1,2,1,1
Data 1,3,2,3,1
Data 4,5,4,6,5
Data 4,4,6,5,4
```

COLOUR TROUBLES

Could you please tell me how to correct the colours on my sprites when I load them into AMOS? Every time I create sprites using the supplied sprite editor, and then I create my backdrop using *Deluxe Paint III* using the same palette, but when I load them both into AMOS, the sprite colours corrupt quite badly. I have tried using the 'Get Sprite Palette' instruction, but to no avail. Could you please help?
Tom Logan, Abergavenny

Your problem ranks quite highly in the 'most common problems' list. Essentially, what happens is that the sprite colours are held higher up in the palette than the program is actually looking for, so here's what you have to do. Enter this listing, and all your problems will be solved. Well, this one anyway.

```
For X=0 To 15
  C=Colour(X)
  Colour 15+X,C
Next I
```

3D FEAR

Does AMOS 3D actually work with the A1200? You may wonder why I use the word 'actually'. This is because I have already made the mistake of rushing out and buying a copy, only to find that the object modeller corrupts as soon as it boots. The actual AMOS extension works fine, and I can load and display objects to my heart's content, but I can't actually define any of my own. What do I do?
Caroline Aldis, Isle Of Wight

Europress are constantly expanding and updating their modules as well as the original AMOS, so if you are finding compatibility problems, then make sure you are using the latest version. Contact Europress Software on 0625 859333 and ask about the latest updater. If you don't want to go through the hassle of sending your program disks all over the place, then check your local PD library, to see if they have the updater disk in stock!

L-PLATE HELL

I am a total beginner to computers, and admit now that I may have jumped in at the deep end when I purchased my Commodore Amiga 500. I have to admit, I wasn't expecting to be quite as perplexed as I was! AmigaDOS? CLI? Then a wonderful package by the name of Easy AMOS caught my eye. Learn to program and create in an easy environment? Sounds perfect to me! I rushed home, loaded it up and began to work my way through the manual. All was going well until disaster struck on page 16. The listing just doesn't seem to work! The problem seems to stem from the WAIT VB1 instruction. Sorry I can't give you more information than that!
Mrs. M. Caballero, Swansea

There are a couple of points in this program that people seem to have problems with. The first major problem appears with the first two load commands – Track Load and Load. These have to be keyed in exactly as printed, otherwise they won't work. It seems in this case, though, that your problem is that you haven't read the listing carefully enough. The command you are referring to is actually WAIT VBL, not Wait Vb1. The VBL stands for Vertical BLank, and tells the computer to wait for the next screen refresh.

STICKY MOUSE

I have been working on a card program for the last couple of months, and now that I am almost finished, I am finding that I can't reach all the areas of the screen with the mouse pointer. I have enclosed a copy of the listing, and as you can see I am using a larger than usual screen area – could this have anything to do with it? I have tried repositioning the screen using the Screen Display command, but that doesn't work at all.
Brian Hotten, Welling

It sounds to me like you've forgotten to set your mouse limits. The area the mouse is constrained to is marked out with the instruction Limit Mouse X1,Y1,X2,Y2. Have you used this? If you use the instruction without any variables, it automatically opens the entire screen to the mouse. So, after your Screen Open instruction, enter the line:
Limit Mouse : Wait Vbl
and all should be well!

PRO COPY PROBLEMS

I have a copy of AMOS Professional and an Amiga A1200, and am having terrible problems copying disks using the disk manager. Sometime disks will work fine, other times it won't read them at all. What am I doing wrong, and is there any way of fixing this problem?
Kenny Gribbin, Colchester

Well, I'm not too sure that you have a problem at all. You don't state in your letter what sort of disks you are trying to copy, but if it's any form of protected commercial software, then the Disk Manager will not copy it. It is only to be used for backing up your own files or AMOS Pro disks, and similar activities. Modern software can be heavily protected to stop more capable copiers ripping through them, and disks like these just won't be read by the disk manager. If you are having problems with copying unprotected disks, then make sure you have the latest version of the software. Contact Europress on 0625 859333 for details of the latest upgrade.

TRACKING TROUBLE

I am currently trying to write an arcade game similar to *Project X*, but am having a lot of trouble with the music. In the AMOS Pro manual it talks about the Track Loop instruction, whereby you can take a single tracker module and loop it, to make it last much longer. As this seems a sensible way of saving on memory, I incorporated it into my listing. I ran the program and all ran fine, until it came to the point where I wanted to stop the music, at which point AMOS Pro refused to recognise the instruction. Do you know what the problem is?
Samuel Beavis, Grimsby

Indeed I do. There is nothing wrong with your listing, or the way you have used the tracker modules. The fault must fall at the feet of none other than Francois Lionet himself who, while coding AMOS Pro, forgot one of the 'F's in the instruction. So, to get TRACK LOOP OFF to work, you actually need to enter TRACK LOOP OF. Strange, but true!

LOOP LOOPY

Sometimes when running a program in AMOS Pro that contains sampled sounds, they loop continously. As you can imagine, this is causing my arcade games to end up a little noisy once the sound effects start. How can I stop this from happening?
William Mediran, Bradford

Well, William, I'm afraid that there is no cure as yet for this problem. I have to admit that it isn't something I've come across before, but after checking with Europress, I've been told that this is something they are looking into, and hope to release an Updater disk soon to solve this problem. Watch this space for further details.

UP TO DATE?

I have often read of 'AMOS Updater Disks', but have a couple of questions for you concerning them. I would be very happy if you could find the time to answer them for me:
(1) I have seen them advertised in Public Domain libraries. Are these the full things, or just demonstration versions?
(2) What exactly does the disk do?
(3) Will my existing programs still be compatible with the updater in action, or will they have to be rewritten?
Nick Train, Angus

The Updater disks were brought in initially to implement a couple of routines that AMOS creator Francois Lionet left out, as well as fix a couple of bugs still present in the system (remember, a large bulk of AMOS was written on a French army toilet!). The original AMOS system has since improved dramatically, with new commands and routines being created all the time. The only way to keep all existing users up to date is to release these updater disks as public domain, so the versions you see are the real McCoy. They work by removing your old system files and replacing them with shiny new ones which will do a lot more, as well as work the way they were intended to. All your old files will still be compatible, as old commands are never removed.

PUBLISH AND BE SUED?

I have written a brand new multi-user wargame on AMOS, and I feel it is strong enough to be published. What can I do that won't have Europress' lawyers crawling all over me. My manual states that I have to include the AMOS logo within the program as well as credit it in the manual, but I fear that this will cause software houses to ignore the program. What can I do?
Gerald Benson-Smith, Leeds

Gerald, your prayers have been answered. Since your version of the manual was printed, Europress have changed their policy concerning published software. You now no longer need mention AMOS in any form when publishing, but you do need to let Europress know in writing what you intend to do, as well as supply a copy of the finished product. Europress reserve the right to announce that it was created with AMOS after the game has been on sale for two months.

NEXT MONTH

If you have any more AMOS-related questions please send them in to Tony Dillon at CU AMIGA, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. We'll run another AMOS help column in a few month's time.

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GETTING STARTED WITH HYPERBOOK

In Part Two of his tutorial Jason Holborn unleashes the hidden power of *HyperBook* with a little help from HML, its built-in macro language.

PART 2

Welcome back to CU Amiga's guide to *HyperBook*, the great Gold Disk multi-media applications generator that we handed out on the coverdisk of the June issue of CU AMIGA. If you've been following this series of tutorials, then no doubt you've already discovered how easy *HyperBook* is to use. Unlike a traditional programming language, *HyperBook* allows you to create some quite powerful applications, utilities and even full-blown interactive multimedia information systems without ever having to worry about syntax and parameter formats.

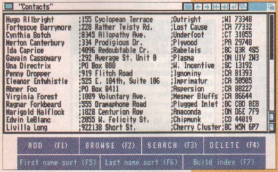
GADGET DRIVEN

Obviously all these gadget-driven delights are all well and good for rodent fans, but to really master the true power of *HyperBook's* many delights, you'll still need to indulge in a bit of programming – don't worry, programming under *HyperBook* isn't as hair raising as 'real' programming using languages such as C, assembler and even 'beginner friendly' languages like AMOS. Built into *HyperBook* is a very well-endowed macro-based language called HML which – for those of you who like to know the meanings of such acronyms – stands for 'HyperBook Macro Language'. Before we go any further, however, it's important to note that HML is tied in very closely to William S. Hawes' ARexx language, so I'm afraid you won't be able to take advantage of it unless you have either bought a copy of ARexx or you own an Amiga equipped with Workbench 2.0 or better. Commodore (in a rather uncharacteristic show of foresight) bundled ARexx with all Amigas when it introduced Workbench 2.0, so anyone who has bought an Amiga since the release of the 2.0-based A500 Plus will be able to use HML.

HML is really only a collection of functions that are built into *HyperBook* to allow you to extend your *HyperBook* 'stacks' (or should that be 'books'?) immeasurably. In order to access these functions, you have to write what are known in ARexx terms as 'macros' that are basically short ARexx programs. If you want to see a demonstration of HML in action, why not take a look at the wide range of demos included with the *HyperBook* program – the 'Calendar' and 'Calculator' demos are particularly good examples.

This month's *HyperBook* guide provides a short introduction to the HML programming language. If ARexx isn't automatically installed when you boot up your Amiga, then click on the 'RexxMast' program on your Workbench disk to set it in motion. Anyway, let's get stuck in...

You can take a look at the example database included with the *Hyperbook* Examples disk. Of course our database will be a lot more powerful than this!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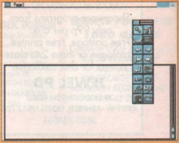
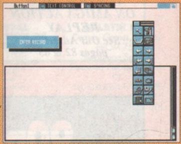


❶ STARTING WITH A LIST

Our short tutorial stack comprises a single button that – when clicked on with the mouse – will bring up a requestor allowing you to enter a string of characters that will then be entered into a list gadget. In its basic form, our *HyperBook* demo doesn't actually do anything more than this, but even this most basic HML example could be extended into a full-blown database. As they say, the sky's the limit!

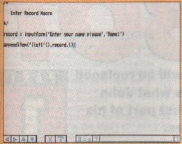
Right, the first thing to do is to boot up *HyperBook* (not forgetting to run ARexx first) and once it has loaded, create a list gadget by clicking on the 'Create List' button that can be found in the *HyperBook* toolbox. The mouse pointer should then change to the shape of an upturned 'L'. Drag out the shape of the list box so that it fills the entire bottom half of the screen. When the 'Edit List' requestor pops up, don't change anything – just click on the OK gadget to accept the list as it is.



❷ ADDING BUTTONS

Next we need to create a button that we can click upon to bring up the text entry gadget. So, without further ado, click on the 'Create Button' tool and drag out a button of the same kind of size as the one shown in the picture above. When the 'Edit Button' requestor pops up, feel free to change the appearance of the button to suit your needs. For the sake of this tutorial, however, we're going to leave it as it is. Click on the OK gadget to accept the button.

So far our button doesn't have a label, so we need to add one. Click on the 'Edit Object' tool and then click twice with the left mouse button on our button and a cursor will appear in its centre. Type 'Enter Record' and then click on the 'Edit Object' tool again to exit the button editor.



```
/*
  Enter Record Macro
*/
record = inputform('Enter your name please','Name:')
appenditem('list1'(),record,1)
```

③ INTRODUCING BUTTONS

Believe it or not, but the 'front end' of our *HyperBook* stack is now complete. Now we need to write a macro to control the 'Enter Record' button. Select 'Create Macro' from the 'ARexx' pull down menu and (as if by magic) the Macro Editor will appear. Unless you've already played around with the menu items in the ARexx menu, chances are this is one feature of the program you've never seen before. Don't let this part of the program bother you – the Macro Editor is really nothing more than a glorified text editor designed specifically for the task of creating and editing ARexx macros which themselves are really nothing more than ASCII text files. Indeed, you can even save your macro off to disk and edit it using a standard ASCII text editor such as *Cygnus Ed*.

When the Macro Editor appears, enter the following ARexx script.

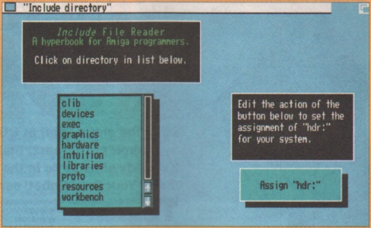
```
/*
Enter Record Macro for HyperBook
*/
record = inputform('Enter your name
please','Name:')
appenditem('list1'(),record,1)
```

Once you've done this, click on the window close gadget. Unless something unexpected happens (like a powercut or the outbreak of World War III), a requestor should appear asking you what you would like to call this macro. Type in 'EnterRecord' and then click on the OK gadget. You have now entered your first *HyperBook* HML program – now that didn't hurt a bit, now did it!

Before we go any further, however, let's take a look at exactly what our script actually does. Well, the first part of the script is nothing more than a comment that reminds us exactly what the script does. Unlike a full-blown ARexx script, ARexx macros don't have to have a comment preceeding them, but it's a good programming habit to get into, especially if you're writing larger or more complicated macros. The comment can be identified by the two ARexx comment 'markers' – '/*' and '*/'. These are exactly the same as those used by the 'C' programming language, so all you C programmers should feel right at home here.

The script then starts by calling a function called 'inputform' that is built into *HyperBook*. This rather inconspicuous little function allows you to bring up a requestor that asks the user to enter any number of lines of text. In this particular case, we only need one line, so the format of the command is very simple indeed. When we start playing around with databases within *HyperBook*, the format of this command will become considerably more complex. As you can see, two parameters are passed to the function – 'Enter your name please' and 'Name:'. The first of these is used as a title for the requestor so you could put just about anything in here. The second, on the other hand, acts as a sort of label for the string gadget that will be displayed. Once again, you can enter just about anything, but the label must end with a colon (:) symbol. The string that you actually enter when the *HyperBook* stack is run is returned by the 'inputform()' function and it is captured into an ARexx variable that we've called 'record'.

The final command in our macro is the 'appenditem()' function which, not surprisingly, is used to add the text that we entered onto the end of our list gadget. It needs to be fed three parameters – the name of the list gadget that is to receive the new record (in this particular case, we've used the default name 'list1' that *HyperBook* automatically gives the first list gadget you create), the variable that contains the data to be appended and the colour that the text is to be displayed in (a value of 1, for example, will force *HyperBook* to display the new entry in black).



"Include directory"

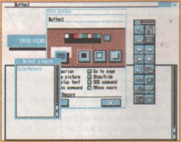
Include File Reader
A hyperbook for Amiga programmers.

Click on directory in list below.

clib
devices
exec
graphics
hardware
intuition
libraries
proto
resources
workbench

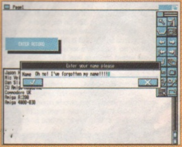
Edit the action of the button below to set the assignment of "hdr:" for your system.

Top: There are many other useful information handling tasks that *Hyperbook* can be applied to. Automating programming tasks is just one of them. Take a look at the examples supplied on the second disk for a better idea.



④ CONNECTING UP

Now that we've created our macro, we need to attach it to the 'Enter Record' button. Select 'Edit Object' from the *HyperBook* toolbox and then click on our button once with the left mouse button and then again with the right mouse button. The 'Edit Button' requestor should now appear. At the bottom of this requestor are eight 'action' buttons that are used to attach actions to buttons – click on the 'ARexx macro' button and when the 'Select Macro' requestor appears, click on 'EnterRecord' and the name of our macro should appear at the bottom of the Edit Button requestor. Click on the OK gadget and we're ready to test our *HyperBook* stack!



Name Oh no! I've forgotten my name!!!!

Jason H
Nic Vel
Dan Sli
CU Amig
Commodore UK
Amiga A1200
Amiga 4000-030

⑤ TESTING, TESTING

Right, now let's put our *HyperBook* stack to the test! Click on the 'Reader' tool in the *HyperBook* toolbox and then try clicking on the 'Enter Record' button. With any luck, a text requestor should appear prompting you to enter your name. Type in anything you want and then click on the OK gadget and – if everything goes well – the text that you entered should appear in the first line of the list gadget. Try entering a couple of extra lines and you will see how successive lines of text are automatically appended to the end of the list gadget.

There's virtually no limit to the number of lines that you can enter and what's more, you don't have to worry about saving the contents of the list gadget separately – because they are effectively part of the list gadget structure, *HyperBook* saves everything you enter into the list gadget as part of the stack! All we need now is a 'delete', 'edit' and 'search' function and we've already got the workings of a database! CU

NEXT MONTH

So far we've really only scratched the surface of *HyperBook's* built in programming language, HML. Next month we take our HML tutorial a step further by applying what we've already learnt to an all-singing, all-dancing database program!

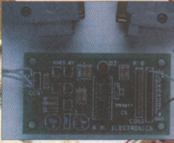
BUILD YOUR OWN ROBOT

Soon the entire staff at CU will be replaced by androids... at least, that's what John Kennedy aims to do in the first part of his 'Build Your Own Robot' series.

PART 1

The world is full of robots – if they're not starring on the TV, they're working in car factories or handing out money on street corners in the guise of automatic teller machines. All real world robots work on the same simple principles, and it is surprisingly easy to build your own mechanical marvel and use your Amiga to control it.

In this series of DIY features we are going to explore various aspects of robotics, including the interface electronics, the control software and the actual hardware involved. At the end of it all, you should not only have a better understanding of how robots work, but by following the simple instructions you'll also have built a semi-intelligent robot of your very own.



The circuit is fairly easy to construct, so shouldn't offer any major problems to new DIY addicts.

WARNING

READ THIS FIRST

We want you to enjoy building your project, so please take the time to read these warnings.

Although the project described here has been built and tested, neither the author nor CU AMIGA can be held responsible for any damage which may be caused to either yourself or your computer as a result of using it. As no mains voltages are required in this circuit it is extremely unlikely that you could electrocute yourself, but you should still take care. If your computer does not behave normally when the project is connected, switch off immediately. Check the circuit carefully for short circuits and wiring deficiencies. Always add or remove the parallel port connector with the computer switched off.

Never leave the soldering iron unattended, and always switch it off when it's not in use. It is all too easy to forget about it and then pick it up by the wrong end several hours later. If possible, wear protective eye-gear when soldering and use a vice or clamp to hold the circuit in place. Never splash hot solder around.

INTERFACING

This month we'll examine how the computer is connected to the real world, and can both give control signals and receive inputs from its surroundings. We'll also look at a practical circuit that can accomplish these goals very cheaply and easily. Even better, you won't have to build it yourself.

Most robots are driven by electric motors of various sorts, and provide feedback by means of light and pressure sensors. The 'brain' behind it all is actually a program running on a computer somewhere, and can therefore be as simple or as complicated as is needed.

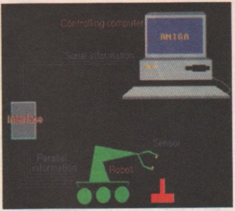
Dealing with the output of control signals first, it is apparent that somehow the electric motors of the robot must be switched on and off under the control of the computer. The easiest way to do this is by means of a relay – an enclosed switch that can be operated by a small control current. The small control current causes the relay switch to close by means of a tiny electromagnet, and the switch contacts can then cause the more current hungry motors to operate. The controlling current comes from the Amiga via a transistor switch, and this is where an interface circuit is required.

If you examine the back of the Amiga you'll find several useful looking interface connections. First of all we have the printer port, which offers 8-bits of data together with some strobe and control signals. This connector is also known as the parallel port, and it's very nearly exactly what we are after. When data is sent to the printer for output the pins of this port will swap between high (5 volts) and low (0 volts) levels. If we sent these signals into a latching circuit to lock them in their high and low positions we would then have an 8-bit output port – perfect for controlling relays and thus motors.

SPEAKING SERIALLY

Although completely feasible, there are drawbacks to this idea. First of all, without resorting to a slightly more complicated circuit, the port would be solely configured for output – which would leave us with the problem of where would we attach sensors? Secondly, using the parallel port would require about 10 wires connecting the computer with the robot, which could be a bit unwieldy and restrict movement. Thirdly, parallel output isn't very good at travelling long distances.

How a robot works. The robot contains motors and sensors, which cause movement and return information. These signals are converted by the interface into a form the computer can understand, and a piece of control software makes the decisions on what happens next.



The other useful port on the back of the Amiga is the serial port, which can transmit and receive data in serial form only, using two control lines and a ground. Serial transmissions can travel quite large distances, and writing software which makes use of the serial port is quite easy. Therefore what we would ideally like is a circuit which can receive and transmit serial data and translate it into several inputs and outputs.

MAPLINS TO THE RESCUE

While leafing through my Maplins catalogue I found this very circuit in the 'Projects and Modules' section. The RM9011 is a ready-built module which provides any RS232 (serial) equipped computer with an 8-bit bi-directional (input and output) parallel port. It's even got a little red light on it, and best of all it costs less than £20.

The RM9011 operates at up to 1200 baud, and will connect almost directly to the serial port at the back of the Amiga. You can drive it with nearly any programming language, and even use your favourite COMMS software to do the job for you.

PARTS LIST

LP85G	8 Bit I/O + RS232	£19.95
YQ49D	25-way D-type Socket	£1.20
JZ17T	23-way D-type Plug	£0.68

Connecting wire
Case for plug and socket box for circuit.

As you can see from the photograph, the circuit is very small. It's look belie the fact that it is an incredibly flexible circuit, which can be used for all sorts of purposes. Over the next month or two I'll mention any uses other than Robotics which come to mind.

AMIGA CONNECTIONS

To add an RM9011 to an Amiga, you'll need some connectors – namely a 25-way D-type Socket to connect it to the serial port, and a 23-way D-Type Plug to connect it to the floppy-disk expansion port.

Why the floppy-disk expansion port? Good question, and the answer is power. The RM9011 needs a 5-volt supply, and there isn't a suitable connection available from the serial port. There is however a good 5-volt supply from the floppy port, originally provided for external disk drives. If you already have an external drive with a daisy-chaining through-port, you will be able to take power from this socket instead.

Alternatively, if you have an external 5-volt supply you may want to use this instead. At least 100mA DC must be available, and remember to use the ground from the supply as well.

The diagrams show the connections you'll need to make. Notice that for correct operation you will need to connect pin 6 to pin 20, and pin 4 to pin 5 on the 25-way serial socket.

You can make the connecting wires as long as you think you'll need the circuit. Remember that the module will probably be situated inside the robot, so if you want it to be able to move freely around the room you'll need a good few metres of thin wire. The makers of the RM9011 also make an adapter which offers you wires up to 2.5Kms long, but with the basic circuit you should still have no problem with 10 metres or so.

If you're the fussy sort, you may want to buy miniature connectors to clip onto the input and output pins of the RM9011. If you're like me, you will solder the wires directly to them. For total overboggle, you could mount the circuit in a box and use eight 3.5mm jackplugs to provide access to the input and output connections.

POWER UP

With the circuit wired up and checked, switch off the Amiga, plug the connects to the serial and flopy ports and switch on. If the usual boot-up sequence doesn't happen, SWITCH OFF IMMEDIATELY and re-check your wiring. If all goes well, the LED on the circuit should be lit and the Amiga should boot-up as normal.

Now you're ready for testing, and the first thing to do is to boot Workbench and run the Serial Preferences program in the Prefs drawer. All the default settings will suffice, except the baud rate which will need to be changed to 1200.

Now open a shell, and type: ECHO "!W0" > SER: and the red LED on the unit should flash. With some COMMS software (such as *NCOMM*) you'll be able to hold a little conversation with the circuit. When you enter !R and press return, the circuit will respond with the current state of its inputs – which will be 255 at present.

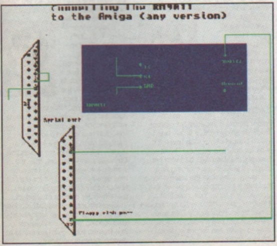
The documentation which comes with the RM9011 comes with a full BASIC listing, which should work with minor alterations on versions of AmigaBASIC. We'll look at much better ways of communicating with the circuit in months to come, but you should be able to use it to switch LEDs off and on from within any COMMS program by means of typing !W0 and !W255.

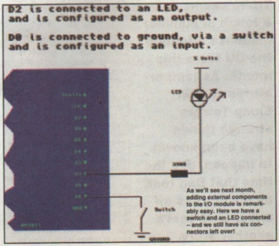
The diagram shows some circuits you may want to experiment with until next month, when we'll look at adding some motors and sensors. CU

NEXT MONTH

Next time we'll look at adding some more electronics to provide motor control, and how to add a few touch sensors.

Below: You'll need to make two connections to the Amiga's ports to get the RM9011 talking. Remember to short 6 to 20, and 4 to 5 at the serial port. Use short lengths of wire which can be contained inside the socket's hood.





D2 is connected to an LED,
and is configured as an output.

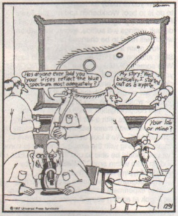
D0 is connected to ground, via a switch
and is configured as an input.

As we'll see next month, adding external components to the I/O module is remarkably easy. Here we have a switch and an LED connected – and we still have six connectors left over!

BACKCHAT

Get ready for more noxious outpourings from the CU mailbag. This is where you have your say. This month's letter answerer is Tony Dillon.

THE FAR SIDE By GARY LARSON


Has anyone ever told you your irises reflect the blue spectrum most adequately?
My story? Well basically, I started out as a zygote...
Your lab or mine?
Larson
© 1987 Universal Press Syndicate
1291

Scientific meat markets

SEEDY REVIEW?

I am writing with regard to your Pandora's CD Review in the July issue. I wouldn't normally respond to an article in such a fashion for two reasons – I doubt you would print it, and it nearly always sounds like sour grapes on the part of the company concerned. In this case I have to make an exception.

The CD in question was clearly produced to show how multimedia productions could be used in education, business, the home, at work, at play and in various areas of production. It is the concepts and techniques present on Pandora's CD which are just as important as the chosen content.

I appreciate that CU AMIGA is primarily a games magazine [*?? – Ed.*] but if you are going to try to attract an audience of serious users via 'Get Serious' sections, you will need to review products from the perspective of the serious user, not the gamer.

The review did not mention the diverse applications on the disk including the juke box, motion video, textures, Insight: technology sampler, etc., etc. and neither was this reflected in your poor choice of screenshots. It should be noted that the multimedia productions are NOT examples of using the photograph, textures and clipart libraries as not a single one is used, nor do these libraries contain business and building shots, that was in the productions which are not distributable!

Pandora's CD has achieved good sales, into four figures, within six weeks of release with virtually no advertising. So far we have not had a single negative response but we have had many positive ones. I feel so confident in Pandora's CD that I am willing to make this pledge; if any individual buys Pandora's CD and feels that they have not had excellent value for £4.99 they can return it within seven days for a full refund, no questions asked.

I feel Pandora's CD has been misrepresented and hastily reviewed. Maybe the time has come for CU Amiga to 'GET Serious'.

Lee Gibson, Managing Director, Optonica Ltd.

Over to Mark Patterson, who wrote the review: 'It's always nice to get feedback from companies, in whatever form. Of course you're entitled to your opinion. Usually when a producer justifies their own product you can't expect a wholly unbiased opinion. However, it isn't the case here, and I commend you on your money back guarantee. As for myself, I've been using computers for 14 years and have been writing for magazines for seven years, which I think is a creditable enough background to draw on when review-

INSIDE INFORMATION

Good news for all you non-A1200 owners out there, who want to get hold of the new machine cheaply, but don't want to give up your old favourite. The A1200 received an unexpected price drop recently from £399.99 to £299.99 with no trade in necessary. Why? Who can say, although some quarters are blaming Comet for being too aggressive in the market, plus the rumour that the response to the trade-in deal was disappointing. Even so, Comet's Comic Relief pack is still 30 pounds less than Commodore's new price point. Could this be a premeditated move?

TEAM TALK

There seems to be a touch of summer madness affecting the CU team this month. As temperatures soar in Emap Towers strange things have been known to happen, like the time that Dan took all his clothes off and... well, that's another story.

DAN SLINGSBY

The heat seems to have affected Dan so badly this month that he's been unable to make it past the front door. Sadly his absence was not noted for many weeks, which says a lot about his hands-off management style. In all honesty though Dan's absence was down to the fact that he's been away on his hols – the first one that Lord Emap has allowed him to take in three years!?! Taking advantage of this much needed respite Dan jetted off to the USA where he vainly attempted to relive his memories of a summer of lustful fun he had at Ocean City. Unfortunately, the babes recognised him from his last visit and he was inundated with paternity suits and lots of little kids calling him Daddy. Mumbling something about an important meeting in England he quickly beat a hasty retreat. Next year he plans to holiday in Bournemouth.

JON SLOAN

After last month's escapade with the rolling pin Jon's been sporting a lovely lump on his head. He claims he walked into a tree but we all know better. Despite being able to single handedly maim 50 knife wielding maniacs (with one arm tied around his back!), his martial skills seem somewhat lacking in the marital department. He didn't let this minor physical impediment detract from his enjoyment at finally been given control of the mag (even if it was for only two weeks). The team thought that Dan was bad with his physical jerks in the morning and company speech in the afternoon, but that was nothing compared to Jon and his ruler! Yes, now that Heather's departed too he turned into a real fiend. Fortunately Dan was away for just two weeks so he was able to leash Jon before serious injury was caused.

TONY DILLON

With Heather gone and Dan away we were in a bit of a fix, so we called on Dillon Man to come and rescue us. Defrosted after a 10 million year sleep Tony finds it hard to adjust to life in the 20th Century, still when we want a review all we have to do is point him in the the right direction then undo the chains. After seeing Jurassic Park, Tony was overcome with emotion, apparently one of the Velociraptors looked a lot like his dear old mum (yes, we know that there's millions of years separating Dinosaurs and Man but, hey, if it worked for Spielberg...). The summer weather is just right for our favourite knuckle dragger 'cos it gives him the chance to shed all those inhibiting clothes that modern life forces him to wear. Unfortunately the resulting sight is so disgusting that women have been known to run away screaming in terror.

ing a product. I also trust that you will appreciate that you can't produce an in-depth review of a product in 500 words, which is why not all the features were covered.'

Just to add a few points to Mark's reply. CU AMIGA is not primarily a games magazine, we try to give full coverage to all aspects of the Amiga. To that end you will find that we dedicate a greater number of pages to technical/serious products than other aspects. When we are producing a magazine of this size and trying to cover such a diverse market it is inevitable that some products do not always receive the amount of coverage that they merit.

THE CASE FOR THE DEFENCE

I have read with interest the letters concerning the new A1200 and how people think that Commodore have done them an injustice. Well, I would like to give my opinion.

If people bought a new car next week from Ford and then a car was released the following month which was the same price but with extra accessories, would people expect Ford to trade in their old car for the new one? My guess would be no and that is exactly how we have got to see the situation with the A1200. If Commodore didn't release new machines they would be accused of leaving Amiga owners behind, but when they do release new products at low prices they are accused of cheating computer buyers! They can't win!

My opinion is that people buy something for a purpose and if the product fulfils the purpose in a year's time then it has been value for money, but if not then why did they buy the computer in the first place? If a computer serves the purpose one year it should do the same for at least a couple of years, and then the owner could upgrade. It's just hard luck if you buy something and a better product is released the following week but it is the same situation with cars, software, music et al. This may not be a popular view, but instead of moaning, people should be thanking Commodore instead!

Scott Wright, Wrexham

LETTER OF THE MONTH

AD FRENZY

I am writing to you about what Commodore should do with the Amiga over Christmas. I think many people will agree that Commodore has never really given the Amiga the advertising that it deserves, and now so desperately needs. Yes, I am talking about the console threat and after seeing the company go from an expanding business in 1990-92 to a shrinking one today, I think it's about time Commodore took it seriously too.

They have taken a step in the right direction with the announcement of the CD console and it has a great advantage over the SNES and Megadrive as it can be expanded via disk drives, hard drives, keyboard etc. But will Commodore advertise it properly? I don't mean a 10-second ad trying to get as many Amiga models in the picture as possible. I mean BIG adverts showing the very latest, state-of-the-art, forthcoming titles so as to get the viewer drooling over the thought of owning one of these wonder machines. The next time I walk past Dixons at Christmas time I don't want to see ugly PCs and consoles staring out of the windows, I want to see Amigas showing games from developers like Team 17 so passers-by are pulled towards these console-beating, all-round wonder machines.

Has anyone seen a Commodore advert for an A1200 yet? No, neither have I. I'm also sick to death of walking in to shops only to see an A1200 showing the Workbench prompt. Once I walked into Dixons and I saw that PD game *Sonic The Hedgehog* and it was about 1/20th the speed of the Megadrive version. OK, so the game's not too bad but come on, if I didn't know it was PD how would I know that it was a full 32-bit machine with 16.7 million colours and the rest of it? It just made the A1200 look a bit crap compared to the competition.

About the A1200 software bundles – I want to see excellent games here. Since Ocean nearly always supply something I would like to see the *Starwing*-beater *Odyssey* as part of the bundle. All the games should (obviously) be A1200 enhanced and please, none of the usual 256 colour stuff which is not really using extra sprites, scrolling, dual playfields and therefore not pushing the machine.

The rumoured A1400 sounds excellent and will guarantee that the Falcon doesn't cause any problems – Commodore have other things to worry about. It's just what we need.

Finally, a word to Commodore. Look Big C, this is your last chance so dig into your pockets and prepare to spend some BIG bucks and remember, you'll only get out what you put in...

Anjam Sarwar, Birmingham

Could poor advertising be the secret of Commodore's recent problems? Anjam has raised some thought-provoking issues here, and some that Dave Pleasance should definitely give some time to. If you were to design an advertisement for Commodore, what would you include? What would you focus on? Admittedly, the last Amiga ad was a bit naff, regardless of how much money was spent on it. What we don't need is the image that an Amiga gamesplayer is a small spotty, bespectacled youth who sits in rooms on their own, never opens their mouth to anyone and gets a kick out of mindless violence. Or do we?

AIR SICK?

I have just finished reading July's CU AMIGA and I feel compelled to write to you about Mr Dillon's totally inaccurate report on the new flight simulator *Airbus A320 USA*. I know everyone is entitled to their own opinion of every game they play and that these will vary wildly, but I do feel that Mr Dillon has totally missed the point and has not done justice to probably the most technically advanced flight simulator currently available for the Amiga.

He quite rightly points out that this is not a fast action shoot 'em up and the external cockpit graphics leave a lot to be desired, however he fails to grasp the point that it is designed for the person who wants to sit down and plan his flight. Planning your airway's routing using the maps and beacons as you fly to your destination airfield to intercept the ILS glidescope to do a manual landing may be beyond Mr Dillon, but some of us find it very absorbing. If he does not understand the program, and judging by the screenshots and words printed he doesn't, why don't you get someone else to review the more technically demanding simulations? Instead of resigning the *A320 USA* program to the scrap heap, Thalion should be commended for producing such brilliant software as the *A320* games.

Iain Bracegirdle, Lincs.

Beyond Mr Dillon? Whatever do you mean? If you read the review, you'll see that it clearly states time and time again that *A320* is an excellent simulation of real flight, at one point describing it as a near perfect simulation. The problem lies in the subject matter. To flight simulation fans, and I am one despite your comments (I have been for many years) the navigational aspects are merely the base of flight. Once you have worked out where you are flying and where you are getting to, there is little else to do, save the odd course correction. This, as the review stated, has the capacity to be very tedious.

I'M NOT LEAVING

Since I had my letter published in May's Backchat, I've been surprised by the number of people who've bothered to get in touch with me taking me to task after I threatened to abandon the Amiga.

Well, let's get one thing straight: I will NOT be abandoning the Amiga and buying a PC or an Atari Falcon. When I penned my letter to CU AMIGA I was feeling let down by Commodore and I just had to get it off my chest. I never really thought that CU AMIGA would see fit to publish my letter. This was back in January and I had just heard that the A4000 and A1200 had the same sound capabilities as my old A500 from 1987 while the new Falcon had a DSP and 16-bit sound.

Also, CU AMIGA had edited my letter to make it sound even more angry than it was. They only printed my strongest views and cut

TONY HORGAN

The coolest man at Emap, Tone has no problems with the heat. After many years attending raves that bear more resemblance to saunas than dance halls he is in his element in the summer. We were a little surprised then when he arrived one morning all hot and flustered – it wasn't until a certain female member of staff arrived in the same state shortly afterwards that we realised the cause of his current hot flush. But as this is a family mag it would be imprudent to detail his exploits in these pages. However, send £50 to the usual address and we will return, in a plain brown envelope, full details of H's adventures, plus the photos we took with our hidden camera. Unless, of course, Tony pays us that eminently reasonable amount of cash we requested. I mean it's a small price to pay to maintain your dignity isn't it?

NICK VEITCH

Summer madness certainly seems to have affected old Nick more than anyone. He's actually considering retiring from CU to a Caribbean island for a change of scenery. That's his story anyway. On a different tack (and track!), still unable to find his lost motorbike Nick was recently spotted at a certain high speed Go-Kart track in West London. Frustrated at being denied the pleasures of the open road for so long he took the opportunity to vent his rage on all the other poor unfortunate journalists on the same course. The marshalls warned him about dangerous driving after he managed to run everyone off the road, but it was to no avail and he continued to do a fair impression of a road hog. By the end of the night the other journos got so fed up with him that they tied him to the track and proceeded to drive over him at high speed.

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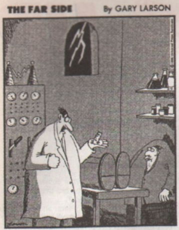

"For crying out loud, Igor! First there's that screw-up with the wrong brain business, and *now* you've let his head go through the wash in your pants pocket!"

out most of the arguments I'd included to back them up. Okay, I did write that I would drop the Amiga and turn to Atari or PC, but, well, I didn't really mean it...

Since then, I've learnt a great deal more about the Atari Falcon and the A1400 that will come equipped with its own DSP. The fact is that the DSP in the Falcon is a great processor, but unfortunately it is let down by the poor machinery in which it is trying to do its job. To draw an analogy: t's no use having the world's best state-of-the-art CD player if your speakers are crap! The Atari Falcon might have a DSP, but it's placed in an environment where it can't do anywhere near what it should be capable of.

Another thing has also cheered me up no end. In the interview with GVP's Vice President in CU AMIGA's July issue, the interviewer asked what he was planning to do with the A1200's PCMCIA slot. He was very secretive but said something along the lines of: 'What would you say to a 16-bit sound sampler for under £200? Keep your eyes out for it...' These few words were the best news I've heard for a long time. This means we could see a 16-bit sampler for the A1200, not just the A4000, and at a reasonable price, too!

So, take it from me, I have no plans whatsoever of abandoning the Amiga. Even though Commodore's done some very rotten things to us users (especially the musicians), the Amiga itself and the network of users that have grown up around it, are just too colourful to walk away from.

Bjorn A. Lynne, AM/FM-Editor and professional musician using the Amiga!

What on earth was that all about? I'm confused.

ARABIAN DELIGHTS

I have read your recent review of the game *Arabian Nights* and have noticed several mistakes which I would like to correct.

1. How could you het the hero's name wrong? Sinbad is originally Sinibad.
2. Calif is originally pronounced and written Khalifa and certainly wouldn't be the ruler of a small country. The Khalifas where the people who took over after the prophet Mohamed and they ruled the entire Islamic nation.
3. The so-called Djini is originally pronounced and written Jinni and are what you probably know as Genies. And no, they don't come out of magic lamps, but they are involved with magic. A Jinni is almost a spirit but one that has never had a body and certainly isn't evil.
4. The Vizier is supposed to be a Wazier (or a waziri in Swahili) which, in turn, is a minister.

Hope that's cleared up a few points.
Saleh Al-Kindy, Oman

YOU'VE BEEN SCOOPED

You might have been the first Amiga magazine to publish pictures of the Amiga CD32 (well done), but you weren't the first to show us what the machine actually looked like as The Grattan's catalogue beat everyone to the punch. In their most recent catalogue they had a picture of this new machine linked up to a TV with the CD logo in full view. They even had the price (about £100 more expensive than buying it through a shop) with some of the tech specs, too. So your World Exclusive might have been the case in terms of beating your rival magazines, but you certainly didn't beat Grattan's.
Sid Davies, Brent Cross

You're quite correct. Grattan's did beat us to the punch. We were amazed when a reader sent us a clipping through the post. We'd seen the machine in the flesh by then, but we were embargoed from revealing any details or publishing any pictures until Commodore gave us the go ahead.

INSIDE INFORMATION

Renegade are really moving with the times, if a recent press report is to be believed. Pairing up with futuristic production company Triton Interactive Television, the boys from the East end are preparing to let people play their games over a live television interface. To play, people will use their tone phones as controllers for the action on screen, moving a step forward from Going Live! where viewers shout instructions to an invisible third party controller. The first game to get this treatment will be *Magic Pockets*, and Renegade plan to give *Sensible Soccer* and *The Chaos Engine* the same treatment!

CLUB CALL

They're sprouting up all over the place. Yes, there are now more Amiga User clubs for your inspection than ever before. Obviously we can't feature every single one, so here's a list of some of the ones we've missed so far.

- 1-1 AMIGA CLUB, 11 Avon Close, Addlestone, Surrey KT15 1JO. Tel: 0932 855834.
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- ANGUS AMIGA CDTV CLUB, 22a High Street, Brechin, Angus DD9 6ER. Tel: 0356 623072.
- ARTMAN, 40 Northwell Gate, Otley, West Yorkshire LS21 2DN.
- AUGFL, Lieven Lema, Meesberg 13, 3220 Holsbeek, Belgium.
- BOURNEMOUTH AMIGA CLUB, 36 Homeoaks, 30 Wimborne Road, Bournemouth, Dorset BH2 6QA.
- BR&CJ CLUB, 23 Fairway Road, Shepshed, Loughborough, Leicestershire LE12 9DS. Tel: 0392 72889.
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- CHUD, 103 Newward Road, Bulford, Salisbury, Wilts SP4 9AH.
- CLUB AMIGA, 5 Bowes Lea, Shiney Row, Houghton Le Spring, Tyne And Wear.

DESIGNING UP

We live in a world where the lowest common denominator is catered to the most. Mat Broomfield wonders if it's time for software publishers to raise their sights.

Mat Broomfield is a freelance Technical Advisor to CU AMIGA. He is constantly outspoken in his criticism of poor practices within the software industry. His views do not necessarily reflect those of the magazine.

From a commercial viewpoint most of us enjoy Coronation Street and Neighbours and find The Sun a stimulating read. As kids we attend comprehensive schools and as adults we'll get a job, a mortgage and have 2.2 children. Men will die at age 73 and women about five years later.

We live in an environment almost exclusively governed and shaped by statistics, and none are more influential than those used by marketing men to shape their products, and the way that they sell them to us. Although the numbers used may provide incredibly accurate statistics about the tastes and preferences of each one of us, their purpose is not to seek the individuality in us, but rather to find our common ground – the area where our tastes are most likely to converge.

The same thing is true about the computer games industry. When a game may require many years of man hours to create, and hundreds of thousands, if not millions of pounds, the software house has to be sure that it will reach the largest possible audience. Unfortunately, this means that innovation and originality are often casualties. As bad in my opinion is the platform that the games are written for. There's no point creating a game which will appeal to 90% of the buying public if it requires such up-market equipment that only 10% of them can actually use it. This means that virtually every game is designed for a bog standard machine with one disk drive and a maximum of 1Mb of RAM.

MULTIPLE DISKS

This situation becomes increasingly frustrating when software is published on three, four or even more disks. True it's more difficult to write software that detects and uses extra memory, and it may take longer for such software to load, but if this means that my games playing isn't constantly interrupted by requests for extra disks, then the price is right.

And what about extra drives? I just can't believe the number of two or more disk titles that still don't recognise, much less actually use an extra drive. As a magazine journalist I constantly advise my readers to buy an extra drive and memory as soon as they can afford them. 'It'll transform your life' I say. What I don't mention is how frustrated they'll get when, despite having forked out 50 or 60 quid on a drive, they still frequently end up disk swapping over and over.

So why don't companies write software which recognises their drives and RAM? Plain bloody laziness that's why! I've phoned dozens of software companies and programmers over the last few months, from the greatest to the smallest to ask why their software doesn't support these extras. Not one, not a single solitary company even ventured to offer an explanation. One company actually went so far as to say that it was down to laziness or incompetence on behalf of their programmers. That's an incredible attitude to take – if you realise that your coders are not doing their job properly why aren't you correcting it?

On the subject of floppy based software, I'm constantly taking phone calls from readers who are confused by games that tell them to change disks while the drive lights are still on. Sometimes the disk is still spinning, and on others the light flashes on and off forcing you to change disks in time to the flashing. Software houses please note – disk changing was never supposed to be a test of athletic ability or reflexes! How are people supposed to enforce the message about not changing disks while they're being accessed if you force them to break the rules?!

INSTALLATION

Another question that I put to the software houses was 'Why doesn't your software install on hard disk considering the fact that so many people own them nowadays?'.

This provoked a much greater and more plausible range of answers, the most typical coming from one notable PR executive representing a well known independent publisher. He said 'If there was a way to offer hard drive installation for every title without reducing sales due to piracy, we would take it in an instant. We are constantly examining new ways of combating this problem, but it can be an expensive mistake to get it wrong.'

The theme of piracy is a serious one. I wondered why it was that most PC games are hard drive installable, but was reminded that the PC market is 100 times larger than the Amiga one and therefore 50 percent piracy still leaves healthy game sales. Nevertheless, many publishers still leave their PC conversions until last so that a game has plenty of selling time on other formats.

PIRACY RULES?

I fully accept the software houses fears of piracy. A game that can be installed on one hard drive can be installed on many at virtually no extra effort. Of course there are protection systems such as referring to a code wheel or using a key disk or dongle to validate the version being used, but most companies are sceptical of such methods. I don't know why considering the fact that they're widely used with other floppy-based software.

This may have appeared to be little more than a moan but it does have a purpose. I think it's high time that we were served with software that utilises the set-ups we actually have, not just some average denominator. If it's a case of laziness, make the effort. If it's a lack of expertise, find someone who can. In the meantime I'll continue to do what I always have – vote with my wallet!

HONOURABLE MENTIONS

I couldn't finish this section without mentioning some of the companies who do produce hard drive installable games. Here's my roll of honour in no particular order: Microprose, Lucasfilm/US Gold, Team 17, Millennium, 21st Century, Impressions, Electronic Arts, Psygnosis (eventually!), Blue Byte, Dynamix, Virgin, New World Computing.

Top of the list for customer service must definitely go to 21st Century who not only produced a special hard drive version of their *Pinball Fantasies* game – they even rewrote the game so that a one handed purchaser could play it! Well done. A shining example of good customer service.

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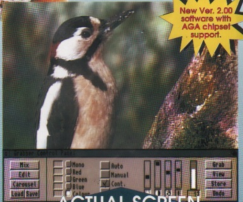

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